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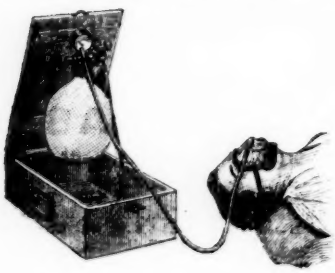

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MR. PRESIDENT AND GENTLEMEN,—Of the many questions needing an early solution at this time of change and reconstruction, that of medical education is far from the least important. We may do well, then, to consider what changes are possible in dealing with the preliminary and intermediate subjects, and, further, whether the teaching of the final subjects as at present carried on is adapted to the production both of the ordinary practitioner and of those whose duty it is to further the advance of the science of medicine and to serve as pioneers and teachers of others.

The spirit of this address is in no sense to raise any question as to the necessity of employing a scientific method in the teaching of medicine, but its object is to lay stress upon the fact that the "Doctor," in the ordinary sense of the term, is of necessity a practitioner of "*the art of medicine.*" He is in a position to further the advance of the science by intelligent observation and logical reasoning, but the nature of his duties and the calls upon his time render it unnecessary to deal with him as a student of pure science, and hence the character of his education should correspond with the nature of the duties he will be called upon to perform.

DEVELOPMENT OF MEDICAL EDUCATION.

The development of our present system has been a gradual process of which one of the most important features, that of fitting a man for the actual practice of his profession, has been removed from the preliminary to the post-graduate stage. Under the ancient system of apprenticeship a boy acquired a knowledge of the essential qualities for successful practice, both from the humanitarian and the economic points of view, before he was compelled definitely to make a choice of his life's work. Some experience of his aptitude for the calling of a doctor was gained, not only by himself, but also by others well qualified to judge of his character, disposition, and mental capacity.

These advantages, of capital importance to the production of the medical craftsman, have had to be sacrificed to meet the requirements of the ever-increasing share taken by science in the advance of medicine. The casual knowledge acquired during the period of apprenticeship, supplemented by a course of "walking the hospitals," became gradually supplanted by the "medical school" and a more strictly defined curriculum, to which from time to time constant additions have been made, with again a curious fluctuation in the importance assigned to the earlier and later subjects included.

Fifty years ago anatomy and chemistry provided the chief sources of scientific instruction, supplemented by limited courses of physiology, botany, and perhaps comparative anatomy. The science of physiology was at that time in its infancy, and the essential facts regarding the functions of the various organs and structures of the body required but a small exercise of the mental powers of the student. The same remark may be applied to pathology as a constituent part of the curriculum.

With the growth of the latter two sciences an ever-increasing amount of time was required for the acquisition of the modicum of knowledge to be acquired by the student, until they, together with the other early subjects, began to engross the greater part of the entire medical curriculum. Meanwhile advance in the whole field of medicine, and especially the development of the so-called "specialities," rendered the time available for the acquisition of actual professional knowledge hopelessly inadequate, and as a consequence the curriculum had to be lengthened, and the share to be devoted to the study of the preliminary and intermediate subjects strictly limited. This expedient has since been rendered inoperative by the constant addition of subjects of prime importance, such as the branches of pathology, and pharmacology.

This is the position in which we find ourselves to-day—the student burdened with a task well-nigh impossible, worried with the frequency and multiform character of examinations, and yet, perhaps, less broadly acquainted with the general principles of medicine than he was after passing through a much simpler course.

THE POSITION OF MEDICINE AMONGST THE SCIENCES.

It may be well here to pause for a moment to consider what place medicine holds among the sciences and how far it is necessary that the practising medical man should be held to be a follower of medical science rather than a practitioner of the art. A suitable preface to this consideration may be found in a dictum of Professor Huxley's laid down in an address to the medical profession "On the Connexion of the Biological Sciences with Medicine"[1]:—

> "It is so difficult to think of Medicine otherwise than as something which is necessarily connected with curative treatment, that we are apt to forget that there must be, and is, such a thing as a pure Science of Medicine—a Pathology—which has no more necessary subservience to practical ends than has Zoology or Botany."

This is an undeniable statement, and I think it behoves all concerned in the education of the medical practitioner to bear it in mind in the decision how far that education should be directed towards the development of the science of medicine, and how far towards the production of the efficient practitioner of the art.

The science and the art of medicine are alike founded on the exact observation of the conditions of health and disease, both owe much of their development to the use of the experimental method, by which observations are confirmed, additional facts are obtained, and new fields of inquiry are opened up. In either the science or the art advance depends upon logical reasoning and upon conclusions drawn from the facts observed. The methods employed differ little from each other in character, but while the worker in pure science seeks for the extension of knowledge as to the causation and the process of disease, the practitioner of the art mainly strives to perfect his knowledge of such phenomena of disease and the means and methods of combating it as have already become familiar. Hence the objects of the art of medicine are more limited in scope and confined to a comparatively narrow field, while those of the science are illimitable and pursued independently of any utilitarian aim. Nevertheless, the science of medicine owes its birth to the observations of the practitioners of the art, and even under the altered conditions which obtain to-day its followers can only work satisfactorily for the advance of knowledge by maintaining an intimate collaboration with the practitioner of the art.

A survey of these considerations should exert a definite influence upon the determination of the nature of the course of education best suited to the development of the doctor upon whose efficiency the happiness and health of the nation so largely depends. It is clear that for the great bulk of the profession a path must be found by which advances in science are utilised for the perfection of the art of medicine, but it cannot be possible to elevate every medical man to the position of an apostle of pure science.

All men are not endowed with the truly scientific spirit, the power of evolving great principles is reserved to the few, and even the correct appreciation and application of those which have been laid down is not a faculty universally enjoyed. Again, the power of reasoning, the possession of initiative and invention, and the facility of developing technical skill, are qualities very unevenly distributed amongst the class of man who adopts medicine as a profession. The reasons which lead to his choice are by no means always governed by the degree of aptitude he possesses for the calling he decides to follow. To some the science of medicine appeals, some adopt medicine from the lofty motive of desiring to benefit mankind, some boys are born to succeed to a family practice, some become students of medicine because the choice coincides with that of a friend, in some business capacity is nil, in others it is the mainspring of the future career and dominates all other feelings or aspirations, lastly, in not a few instances the

[1] Proc. Seventh Internat. Med. Congress, 1881, vol. i., p. 91.

initial choice has never been made the subject of serious thought or consideration.

The student of pure science in the past chose a career which for many was equivalent to a vow of poverty and chastity; from single-minded love of the subject and an abnegation of all thought of personal gain or advancement. Matters have perhaps changed somewhat of late in this direction, but a large proportion of the newer recruits are to departments of technical science of a purely utilitarian nature the practice of which is in no sense to be distinguished from that of an art.

Medicine, therefore, is not a calling which can be held to stand alone as to the difficulty in determining what relative share science and art must take in the moulding of its followers, and it is evident that, except in the initial stage, one and the same course of study can hardly be calculated to produce the desired end, that on the one hand of producing a student of science, or on the other a practical medical man.

Hence it appears evident that in the education of the doctor medicine itself must be allowed to take a more prominent part as an exercise of scientific thought and method, and the attempt to develop a scientific turn of mind by administering smatterings of the ancillary sciences should be abandoned.

Objectionable Features in the Existing Curriculum.

Modern tendency has been in the direction of relegating the study of the preliminary scientific subjects, chemistry, physics, and elementary biology to the secondary schools, and to define the extent of the work to be done by a syllabus which limits the scope of knowledge which will be required at the examination. Can it be maintained that such a method of teaching is that most suitable for the inculcation of broad lines of scientific principle, or does it not rather tend to the initiation of a habit of accumulating a number of details learned more or less by rote for the purpose of passing an examination

A further objectionable feature in the existing curriculum lies in the hurried acquisition of a minimum of knowledge in short successive stages, at the end of each of which the medical student starts afresh with new teachers and to him a new subject which he is apt to regard as quite unconnected with the subjects he has left behind him. Even in a university the limited scope of the knowledge demanded from the student of medicine, and the short period of time allowed for its acquisition, places him at a disadvantage when classed with others who are making a serious study of subjects such as chemistry, physics, and biology, hence courses directly adapted to meet his modest needs are commonly arranged for his convenience. Yet no one can deny the necessity of his acquaintance with the principles and many of the facts of chemistry, physics, and biology as a part of his training as a medical man.

Two difficulties therefore have to be met, one the short period of time which can be allotted to the subjects, the other the want of coördination and continuity in the instruction given, consequent on the present method. In both particulars a retrograde step appears to have been made in the sharp separation of the so-called preliminary and intermediate subjects, and in making the former rather antecedent to than ancillary to the latter.

A difficulty of exactly the same character has become more and more evident in the case of the intermediate and final subjects, and here an attempt is being made to coördinate and render them continuous by appointing teachers of applied anatomy and physiology to demonstrate practically the intimate connexion of these sciences with medicine and surgery in the wards.

It may appear presumption on the part of one who has spent his life as a practising surgeon to venture to suggest an alteration in the method of teaching the purely scientific subjects; but it must be accorded that the teaching of these subjects is but a means to the end of producing an individual whose life will be spent in the same manner with or without the addition of allotting a good half of the time to the service of a hospital and school. I would first point out that those entrusted with the direction of the education of the medical man are not justified in relegating the teaching of the preliminary subjects to the secondary schools, and washing their hands of any further responsibility. This procedure corresponds in character with the feeling of the student that the acquisition of knowledge in these subjects is but a means to the end of placing an examination behind him. There is every reason to encourage the teaching of science in secondary schools, but it is necessary at the same time to ensure that the proper relation of the subjects dealt with to those which are to follow is never lost sight of.

Suggested Regrouping of Subjects.

I would suggest that a remedy from some of these evils might be found by regrouping the subjects and returning in some degree to the simpler course laid out for the student in earlier days. With these objects in view the following changes are recommended:—

Elementary biology as a separate course to be excluded from the curriculum, and the congeries of subjects dealt with in the existing syllabus relegated to their respective positions at the commencement of the courses of anatomy, physiology, and pathology.

The first year of study to be devoted to anatomy, chemistry, and physics.

The second year to be mainly devoted to physiology, together with classes in anatomy so arranged that the subjects dealt with run concurrently with those to which they relate in the course of physiology.

The third year to be devoted to the study of pathology and pharmacology, including such elements of the course of materia medica as may be retained.

During the summer session of this year elementary instruction in clinical methods.

The fourth and fifth years to be entirely devoted to professional subjects as at present.

Examinations.—An examination in anatomy and physiology at the end of the second year.

No examination in chemistry and physics to be held by the licensing bodies, but the whole responsibility for sufficient instruction in these subjects to be thrown upon the respective teachers in the schools, who would satisfy themselves by means of class examinations.

An examination in pathology and pharmacology at the end of the third year.

The final examination in professional subjects to be held as at present after the termination of the fifth year.

The first criticism of this scheme which may be made is that it tends still further to curtail the time to be devoted to the practical study of anatomy. As an old teacher of anatomy this point has been thoroughly debated in my own mind and the objection dismissed for the following reasons. The dissecting room has of necessity long ceased to be the centre of life in a medical school which it used to be, and this depends upon (1) the need for economy in time, (2) the scarcity of anatomical material for dissection. Neither of these difficulties is likely to become less; in fact, there is unfortunately reason to apprehend that the latter is likely to become increasingly urgent. Hence the tendency is for the practical teaching of anatomy to pass still more from the dissecting bench to the class room, with, it is true, a risk in decline in delicacy in manipulation and in intimate knowledge of the finer details of structure, but with a distinct economy of time.

ADVANTAGES OF THE SCHEME.

Against these disadvantages the following points must be considered. Allowing intimate knowledge of the anatomy of the human body to be the most important item in the earlier study of medicine, the plan proposed gives to the anatomical teacher the manifest advantage of virgin soil into which to instil instruction, while the class teaching in direct connexion with the course of physiology in the second year ensures a proper sense of the relation of the structure of the body to its functions to be grasped. Again, the use of sections of the body and of X ray photographs allow the student to gain a true sense of the relations of the various structures in the architecture of the body more readily than used to be the case.

A more weighty argument lies in the urgent necessity which exists of carrying on the knowledge gained in the anatomical department and utilising it in relation to the study of the later subjects. Its relation to the course of physiology has already been dealt with, and it is no less important that as an applied subject it should take its proper place in the courses of pathology and in all the different sections of medicine and surgery. It this be properly kept in mind and arranged for, the study of anatomy will only cease with the termination of the medical course.

I think that the relegation of the commencement of the study of physiology to the second year is justified by the

assumption that it is better for the student to become first acquainted with the structure and mechanism of the human machine, and that the purely mechanical side of function is a more suitable path of entrance to the study of physiology than consideration of the more intimate problems dependent upon an appreciation of vital action.

It would be presumption on my part to make any further suggestion regarding the teaching of physiology beyond making the broad statement that it should be so designed as not only to progress together with the study of anatomy, but also in sympathy with that of the chemical laboratory, the pathological laboratory to which it is an introduction, and later that a special course should carry the application of physiological knowledge to the wards.

A Rational Sequence of Progress.

In considering the question as to how far the student in the past has benefited by the physiological course, it should be pointed out that the responsibility lies equally between the teachers of the intermediate and advanced subjects, and that while the physiologist should strive to make his course strictly appropriate to the needs of the student of medicine, the clinician himself should point out and dwell upon the light that physiology sheds upon the many problems of disease that are dealt with in the wards. The direct passage of the student from the study of anatomy and physiology to that of morbid anatomy and pathology is becoming more and more generally recognised as the rational sequence of progress in acquiring an elementary knowledge of the science of medicine, and the same may be said for the combination of pathology and pharmacology as the logical introduction to the clinical study of disease. The sequence is not only rational but also an easier one for the student, freshly primed as he is with the facts of anatomy and the methods by which the normal vital functions of the body have been investigated and determined.

The allocation of the whole of the third year to these subjects, moreover, is not so prodigal of time as may appear on first consideration, since the student becomes acquainted with a large part of the general principles of medicine, and during the summer session commences to acquire familiarity with clinical methods while the lessons of the physiological laboratory are fresh in his mind.

Readjustment of Departments.

To obtain the full advantage of this rearrangement of the preliminary and intermediate cases some readjustment would be necessary in the various departments, particularly in the case of the assistant teachers or demonstrators. The first element for success would lie in a close coördination between the heads of the several departments concerned, the teachers forming a small board to meet frequently to discuss matters connected with the course of instruction and also the progress of the individual pupils. The second would lie in establishing a closer bond of intercommunication between the demonstrators; this could best be effected by arranging that as many as possible of the demonstrators should work in more than one department. Thus anatomy and physiology, particularly with regard to histology, physiology and pathology, physiology and pharmacology, chemistry with chemical physiology and chemical pathology, while demonstrators of anatomy and physiology might take part in the courses of practical surgery, and those concerned with instruction in clinical methods. There can be no doubt that in a medical school the class of man willing and able to undertake such combined duties would be easily found, and for those who take up the duties of a demonstrator only as an educational phase of their career the appointments would be particularly valuable.

The Development of the Practitioner's Art.

I do not propose to dwell upon the work of the two clinical years because the existing system appears to me the only remaining portion of the old curriculum calculated to evolve the type of man fitted to undertake the duties either of the consultant or the general practitioner. These two years of hospital life now furnish the sole opportunity to the student of acquiring confidence to face the responsibilities which lie before him, and to learn by precept and example what should be the attitude of the doctor towards his patient. It is during this period that the student gets to know his teacher and the teacher his pupil. It is now that the student gets an insight into professional manners, acquires the proper humanitarian feeling towards his patient, and gains his first intimate knowledge of human nature. Science alone, apart from a knowledge of human nature and the capacity to read men and sympathise with their weaknesses and difficulties, can do little towards the evolution of the successful practitioner.

I would only enter a plea for the utmost simplification in methods of diagnosis, and the need for exactitude of observation being constantly kept before the student. It should be impressed upon him that an X ray examination is to be regarded as affording corroborative evidence, and not as a means of making a diagnosis; that surgeons long before the days of bacteriology were able to draw a distinction between staphylococcic and streptococcic infections; in fact, that the natural senses properly cultivated suffice for the very great majority of the work that he will be called upon to perform. The habitual resort to special methods, and the belief that complicated apparatus is necessary in the investigation of the ordinary problems of disease, is likely to do as much towards the destruction of the art of the practitioner as the methods of science can do to help it.

THE DEMAND FOR GRADUATE TEACHING.

Up to this point we have been concerned with the undergraduate and the attempt to inculcate in him a broad acquaintance with the principles of medicine and of the practice of the art, and it is claimed that in a scheme such as has been outlined, proper compromise has been effected to ensure a sufficiently scientific basis upon which his future life's work can be built up. From this stage a great majority of the men pass from the schools, some after fulfilling the duties of the various junior posts in the hospitals, to the actual practice of their profession, and a new sphere is opened up to them in which they will need to rely on the experience and example of their senior fellow practitioners to complete their education as a doctor.

A minor proportion will desire to remain and increase their store of knowledge and experience, to become workers at the science of medicine, or eventually to take part in the education of others.

Can it be said at the present time that the best opportunities exist for this latter class, or that arrangements allow such a course of study as has been suggested to be amplified to meet their needs? It is true that a man in his own school and amongst his own teachers is in a position to follow out some line of investigation he may wish to embark in, and again certain special hospitals not directly connected with a medical school may offer him opportunities for following their practice or even to undertake a research in neurology, ophthalmology, laryngology, urology, &c. He also has the opportunity of meeting financial difficulties by undertaking the duties of a junior teaching post in his own school. Nevertheless such men have in the main to work out their own salvation, and conditions are far from favourable for easy or continuous study.

For the graduate from the provinces, from the dominions, or from abroad, except for the possibility of establishing an arrangement with an individual teacher, matters are far more difficult, and should he desire to follow up more than one subject he will probably require to visit a number of institutions, neither of which he can regard as his home.

I do not think that graduates from abroad are to be regarded merely from the point of view of men who may carry the prestige of the British school of medicine into other lands, but rather as members likely to contribute an important share towards the success of the school to which they may become attached. The same advantages obtain to the entry of students from any source in the British Empire; each introduces a different experience of men and of methods, the diffusion of which may exert a vivifying and stimulating influence on existing lines of thought and on the direction of action. Under existing circumstances these men are in a position to do little beyond "walk the hospitals," or to undertake a research in a laboratory as individuals and not as members of a school for which they may develop a lasting pride and affection. Their presence in the past in a primary school of medicine has been an actual source of embarrassment, for, if in any numbers, they necessarily either engross a large part of the attention of the teachers to the detriment of the undergraduates, or they fail to attain the object for which they have come.

A still larger class of graduate student needs to be alluded to—the practitioner who wishes to refresh, modernise, and augment his store of knowledge, and fill in the gaps in his powers which experience has made him realise; or those who wish to perfect themselves in the practice of one or more of the so-called specialties. Certain provision exists for men of this class, but even in dealing with them it has come to be realised that special arrangements are necessary. In London successful attempts have been made by the West London and the Seamen's Hospitals, both of which institutions are entirely devoted to this object. They have performed particularly valuable work for members of the services and for many practitioners, but their resources are not sufficiently large to meet the future needs. The attempt made to provide for post-graduate instruction by the polyclinic, even supported by the energy and enthusiasm of Sir Jonathan Hutchinson, a pioneer in this field, failed from the fact that the essential element for success, an attached hospital, was lacking.

Want of Success in the Past.

At the present moment, therefore, powerful incentives to the establishment of an efficient system of graduate instruction exist. A strongly awakened desire to further the advance of medicine in this country, the wish to attract the student who has been accustomed in the past to seek post-graduate teaching in the schools of the continent, and the need to meet the growing tendency of the practitioner to fit himself to practise one or more of the so-called specialties with efficiency. In the light of the assumption that this latter class may augment enormously in numbers, if the system of out-patient clinics be developed by the Ministry of Health, the wants of these men may become urgent.

Recent movements (in London) have been in the direction of trying to organise and coördinate the teaching of the large medical schools and the special hospitals, and by a common effort to supply the opportunities desired. It must, however, be allowed that this is by no means the first occasion upon which the establishment of such a scheme has been attempted, and that previous attempts have been attended by very modified success or by absolute failure.

The reasons of this want of success in the past are probably not far to seek, the main elements being the absence of a strongly organised centre, and the fact that schools adapted to the purpose of primary instruction in medicine are ill-suited to the needs of the graduate student. The combined demands of hospital practice and duties in a medical school are as much as any consulting physician or surgeon is in a position to meet. To add a separate series of lectures and classes is to throw an additional task upon an already overburdened man.

The courses of work suitable for the instruction of undergraduates are practically useless for the man who has already obtained his degree or diploma. The most successful teachers of undergraduates, probably by reason of the dogmatic nature of the instruction given and the necessary limitation of its scope, are by no means necessarily those who can interest and enthuse the graduate, as anyone who has passed his life in a medical school is well able to appreciate. Many teachers who are able to enforce broad general principles founded upon practical experience, may lack the necessary knowledge of literature and acquaintance with the results of the most recent methods of scientific research needed by the graduate. Yet, literary erudition and extensive acquaintance with the latest methods and results of research, while not essential for a teacher whose task it is to produce an efficient practising "doctor," are necessary qualifications for the leadership of the graduate who aspires to follow the higher paths of medicine.

The Relation of Primary and Secondary Medical Schools.

In the foregoing remarks it is not intended to suggest that the highest qualifications are not advantageous in imparting the most elementary instruction. If we consider the example of the greatest teachers of the past, such as Huxley or Michael Foster, we find them expending a great part of their energy in imparting the fundamental principles to the junior students, and entrusting to their younger colleagues the detail that the pupil himself is apt to regard as the more difficult part of the subject.

The atmosphere of a primary medical school, where the main object is to impart elementary and practical instruction, is unsuitable to the acquirement of intimate acquaintance with detail, and in a considerable degree to the freedom of thought, the sceptical attitude towards received and adopted views, and the single-minded desire to advance medical science by research, which should animate the graduate who seeks to follow the higher paths of medicine. In the primary medical school the performance of the whole of the practical work in connexion with the patients in the hospital is engrossed by the undergraduate students and the house officers. In the laboratories, again, the main energies of the departments are more or less monopolised by the class teaching, and the graduate engaged in a research, except for his direct association with his chief, must work as an individual and the valuable stimulus of a close relationship with his fellows is missing.

How gladly, for instance, would many a graduate undertake the duties of the ordinary junior posts in the hospital, with the abundant opportunities afforded of observation, from which he is debarred by the simple fact that no room exists for his services. In fact, under existing conditions, except as the occupant of one of the junior teaching posts, the graduate student forms the fifth wheel of the coach in a primary medical school.

THE TRUE PRINCIPLES OF GRADUATE INSTRUCTION.

If these premises be correct it is clear that, in making provision for the many sides of graduate study which exist, adaptation of the present system will scarcely suffice; for the needs of the student of advanced medical science and those of the practitioner of medicine are of different degree and nature, and even for the latter the position of the graduate is quite distinct from that of the undergraduate.

Graduate instruction requires to be utilised for more exacting purposes than that of merely improving the capabilities of the practitioner; it must also include facilities for workers at the science of medicine engaged in experimentation and investigation, and afford opportunities for those preparing to occupy professorial chairs. It cannot be restricted to affording help to the practitioner and giving foreign visitors a glimpse of the views held and the methods in use in this country. We cannot be contented alone with a series of courses such as have been held in the past in Vienna, in which the greatest amount of information is given in the shortest possible period of time:—a system in many respects comparable to the cramming for a scholarship or other examination in the early part of a students' career. The question requires to be solved not only by establishing a system which coördinates the extensive fields of observation and sources of instruction which already exist, but also by the founding of secondary schools of medicine, one of which might form a centre for the whole country.

The former of these objects is already the subject of serious consideration and organisation, and I propose to make little further allusion to it than to express the opinion that the entire direction of this work should be under the control of the secondary medical school to be now outlined.

Staff and Equipment.

The first essential for a graduate school is the possession of a large and well-appointed hospital entirely devoted to the purpose, with sufficiently well-equipped and extensive laboratories directly attached. In speaking of laboratories no distinction should be made between these two departments of the school; for the hospital is the first line laboratory of the student of medicine—it provides him with his field of observation; here he discovers the points which require investigation; it is the ever-welling fountain that engrosses his thoughts; and its inspiration tends to keep him on the direct track and prevents him from wandering into the bye paths of abstract lines of investigation.

The greatest of the services of the great war has been to demonstrate the advantages which accrue from the presence of the worker in pure science in the field of practical medicine, an observation definitely substantiated by the experience gained in all attempts to establish laboratories for pathological research except in direct connexion with a working hospital.

Speaking in the presence of a number of members of a large and important University in the provinces, where medical education is already centralised, I am aware that some of the further remarks I am about to make may not be strictly suitable; but while the arrangements which may have to be made may not be of a similar nature in consequence of the better organisation and equipment of

the departments for the teaching of the preliminary and intermediate subjects, yet the principle suggested, that graduate instruction needs special provision to be made for it quite independent of undergraduate instruction, is equally applicable.

Out-patient Medical Clinics.

It is also, I believe, certain that the need for post-graduate instruction throughout the country is likely to become a much more general and urgent matter should the system of out-patient medical clinics be set up in the near future by the Ministry of Health. London, with its many medical schools under only nominal University control, and the numerous hospitals, laboratories, and museums already in existence, offers a more complex question. I believe, however, it is in some respects a more easy one of solution, in consequence of the greater number of graduates likely to avail themselves of any advantages offered and the more numerous teachers who could be called upon.

The staff of the school should be of the professorial type, but I think it would be neither practical nor advantageous for it to be composed entirely by permanent whole-time professors. In the laboratories this would probably be necessary, but in the case of the clinical work any difficulty might be surmounted by adopting the system followed by the Assistance Publique of Paris in appointing physicians and surgeons to the individual hospitals for a limited period. Under such a system officers from the various schools in London might be seconded, say for a period of five years, to serve as professors in the secondary school. The method would possess the advantages of regularly infusing new blood into the graduate school, of giving a valuable experience to the teachers of undergraduates, and in establishing a common bond of sympathy in mode of thought amongst the several schools. It might do much to raise the general standard of education, while at the same time it would not disturb the time-honoured and successful method of clinical teaching now in vogue.

Not a few of us must, I think, have been interested in the views put forward by Sir James Mackenzie concerning the difficulties which attend the teacher whose life is passed in consulting practice in his limited opportunity of observing the beginnings of disease or of tracing the continuous progress of the disease in the individual when it has once become established. Mackenzie argues that the general practitioner is the only man suitably placed to elucidate the problems of the commencement of disease and their progress towards their eventual termination. Hence he asks that the general practitioner should take a more active and prominent part in the education of the student. I do not think that this proposition affects the question of primary medical education. In the short period at the disposal of the undergraduate it is enough for him to master the fundamental facts regarding the normal structure and functions of the body, the effects upon them of disease, and the characters of disease when developed. The first steps in his education must necessarily consist of the investigation and appreciation of the strongly marked types, and the extension of his knowledge by following the gradually weakening links which stretch backward to the normal must be the study of the man who has at least reached the status of a graduate. In the secondary school, then, the accomplished general practitioner might find a proper place.

Observation and Research.

The hospital would furnish a certain number of graduates with opportunities for observation and research, and also afford facilities for practical work and technical development of the highest class. The graduates would take the place of the junior officers in a hospital attached to a primary medical school, acting as assistants to the professors. These advantages, however, could be enjoyed by only a limited number, and the occupants would need to be selected with care and due consideration of the aims they had in view.

The further field of action is identical in intention with the efforts that are at present being made for the co-ordination of existing sources of instruction, and making them available for the practitioner who desires to go through a limited course for purely utilitarian purposes. It is obvious that, if the scheme of a central secondary school should find favour, the associations who have the work of coördination in hand are the proper agency through which the entire scheme could be completed.

THE CENTRAL GRADUATE SCHOOL OF MEDICINE.

This being the case, the school would be the centre to which all graduates of either class would gravitate, and from it the men would be allocated in whatever special direction and to whatever special teacher they might desire. Thus the whole wealth of material possessed by the hospitals, infirmaries, laboratories, and museums of the metropolis would acquire a bond of union, and a vast amount of opportunity, now so cursorily utilised, might be opened up to any graduate student.

The graduate provided with such a central institution would no longer be a wanderer tilling a solitary furrow, for his school would not only provide a vast field of action, but would also bring him into contact with workers from every school and land—an association which could hardly fail to widen his horizon and extend his experience not only of methods but of men.

The advantages to be gained, moreover, would not be confined to the student alone; the teacher also would benefit in no small degree from contact with the different class of pupil to whom his duty would consist in stimulating the acquisition of knowledge of the highest grade and arousing the faculty of research. Again, the existence of a school of medicine with this scope and these ends in view could not fail to react inspiringly upon the primary medical schools around it. It would tend still further to the elimination of dogma and empiricism from the practice of medicine, and to heighten the standard of education throughout.

Some Considerations OF PREVENTABLE DISEASE.

Abstract of Presidential Address Delivered before the Society of Tropical Medicine and Hygiene on Friday, Oct. 17th.

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Professor Simpson began by thanking the society for conferring the honour upon him of electing him as their President in succession to such eminent epidemiologists as Manson, Ronald Ross, Bruce, and Leishman, going on to point out that the chronicles of the knowledge recently acquired in tropical medicine and hygiene would involve, for the most part, a summary of the work done by Fellows of the Society of Tropical Medicine and Hygiene. As ample evidence of the great bearing which exact knowledge, the outcome of scientific research, plays in the hands of sanitary administration, he mentioned the work done by Ross at Ismalia, in the Mauritius, and Greece, by Malcolm Watson in the Malay States, and by Gorgas in Havana and at the Panama Canal; and he pointed out that these results competed with the earlier results of the bacteriological or botanical era, when the ætiology of infectious disease was first found to involve man's relationship with the lower animals, as well as with the vegetable world. He continued:

Our ancestors attributed outbreaks of disease to an epidemic constitution of the air and its influence on man's economy. That epidemic constitution has still to be studied. It has been lost sight of in recent years, though earlier it engaged the attention of philosophers who ascribed the origin and exceptional spread of epidemics to unusual meteorological conditions which caused floods, drought, and famine. Who shall prove that they were wrong? What effect have floods, drought, and famine on the parasites of disease or on the various animal and vegetable micro-organisms that teem in the soil? Do the parasites gain virulence and increased powers of diffusion in the soil or in the diseased vegetable world subjected to these conditions, or in the herbivorous animals that subsist on it, or in the vermin and insects that feed on the diseased animals and plants, or in man who, when famished, is glad to eat any vegetable, seed, grass, fruit, or meat, even if diseased.

Apart from the virulence and diffusiveness gained by the sojourn of the microbe in one or several of these media, what are the factors which combine to form an endemic

area for a predominant microbe? The geological nature of the soil often limits the geographical distribution and kind of animals living underground, and probably the kind of insects and micro-organisms. Is it in this direction that the explanation may be found concerning the endemic homes of cholera, plague, influenza, yellow fever, and cerebro-spinal disease. Was Cunningham, of Calcutta, on the right track when investigating the nature and composition of the soil and its gaseous, organic, and inorganic contents? Is it the interaction of unusual meteorological conditions on the local fauna and flora of certain limited areas, that prepares the micro-organisms for their migration beyond their endemic homes—not by the air, as Bryden and others thought of cholera, but by making use of man, the lower animals and insects, and sometimes inanimate objects, as carriers. As regards sudden predominance of a particular microbe, I remember once in Calcutta a pond or tank which contained in its water the ordinary microbes found in others. Suddenly it developed only one kind, the remainder having disappeared. What produced it I was unable at the time to determine. Was it some slight alteration in the organic or inorganic constituents in the water that favoured the growth of a single organism at the expense of the other? It appeared to me if this could occur with one kind of microbe it might do so with another, such as the cholera bacillus, and if in the water, why not in the soil, where on the surface of earth drains the cholera bacillus was found? There must be explanation for all these phenomena if we could only lift the veil.

INVESTIGATIONS NEEDED IN THE ENDEMIC CENTRES.

It is necessary to know more about the endemic areas of disease; they should be sought out and classified. It is there that the natural history of the disease in man can best be studied in relation to the geology, fauna, flora, and other conditions existing in the locality, and it is there that the conditions have to be investigated to give us a clue to the factors which change a sporadic or endemic non-spreading or self-limiting disease into a diffusive and wide-spreading epidemic or pandemic. This knowledge will also allow us to adopt successful measures at the fountain-head.

Although much has been learnt regarding preventable disease there are still vast problems awaiting solution by research in preventive medicine. We require to know more about plague, cholera, small-pox, leprosy, influenza, cerebro-spinal fever, trypanosomiases, yellow fever, blackwater fever, and many other tropical diseases and their relation to man's environment, not only in his home but also in Nature. Where these diseases most commonly prevail research laboratories are necessary, well equipped with all the modern resources which bacteriology, protozoology, parasitology, biochemistry, and geology place at our disposal. The investigations need to be on a comprehensive scale and not, as I found in Uganda in 1913, where Miss Robertson and Dr. Fiske were the only representatives investigating trypanosomiases in a part of the country that in ten years had been denuded of nearly a quarter of a million of its inhabitants from this disease and where rinderpest was attacking the cattle.

THE DISSEMINATION OF DISEASE IN PEACE AND WAR.

Professor Simpson under this heading pointed our that endemic disease has now acquired greater diffusing qualities because of the ample means for its transport and dissemination, supplied by the movements of commerce, labour, and emigration, while advancing and retreating armies, with their accompanying refugees, favour the spread in times of war. At these times, also, deficiency of food accentuates the conditions, and the longer the war lasts, and the larger its scale, the greater the effects must be, so that the trials of the five years just passed would possibly leave an aftermath of great epidemics. He asked if it were a mere coincidence that the pandemic of influenza of the twentieth century, like that of the fourteenth century, was followed by widely spread manifestations of mental disorder, hysteria, and unbalanced judgment, and quoted Clouston as saying in respect of the milder epidemic of 1890, that it had left the nervous and mental tone of Europe and America lower by many degrees. After reminding his hearers that cholera and plague are now epidemic in Russia, that typhus and relapsing fever are spreading in Poland, and that small-pox is pervading the continent, he continued:—

War and epidemics bring out the weak spots in our armour of defence against disease, but their after-effect is generally to set men's minds actively in train to devise means for future protection and ideas and schemes that have for many years only created a languid interest suddenly get energised into activity and become a reality.

This is seen to-day in the creation of a Ministry of Health in this country, which has been advocated for 50 years but which the war and epidemic of influenza has quickly brought into being. It is seen also in the determination to grapple with the housing question and the problem of the C3 men, women, and children in the population.

It was the Boer War, with its enormous number of dysentery and typhoid cases, that led to the reinstatement of the sanitary officer in the army. There had been a reactionary movement for some ten years before the Boer War, gradually undoing the efficiency of the organisation of sanitary officers which had been the outcome of the Sanitary Commission reporting on the Crimean War. For nearly that period no sanitary officer was appointed at Aldershot, a position formerly held by a deputy sanitary officer. The first fruits of this policy were the large numbers of officers and men who lost their lives from preventable disease in the Soudan Campaign. The navy led the way in protecting her fleets against disease in the tropics. During the wars with France and Spain in 1778 and following years the West Indies was the principal seat of naval operations and much greater fleets were then employed in that quarter of the world than in any former period. There was much sickness in the fleet, varying greatly in different ships and consisting of dysentery, scurvy, and fever. Dr. Blane (afterwards Sir Gilbert Blane), when physician to the fleet under Lord Rodney, had monthly returns sent to the headquarters of the fleet recording the sickness and deaths in each ship, and anything else that related to the health of the ship. He found that the average mortality in 12 months was 1 in 7 of the seamen, and on an average 1 man in 15 was on the sick list. In 1781 he addressed a memorial to the Board of Admiralty pointing out the excessive mortality and expressing his conviction that if certain proposals which he suggested were carried out, more than two-thirds of the seamen who died in that climate would be saved.

These recommendations were similar to those proposed by Dr. James Lind, a naval surgeon in 1757, in his essay on the most effectual means of preserving the health of seamen in the Royal Navy, containing cautions necessary for those who reside or visit unhealthy situations, &c. Sir Gilbert Blane early recognised the fact that little improvement could be effected in the health of the fleet when left to the initiative of individual officers, and that sanitary rules and regulations, based on scientific knowledge, must be issued by the Admiralty for them to be carried out systematically and efficiently. His recommendations were first put into practice in the West India Fleet with excellent results, and later they were extended to the whole of the navy. The improvement of the health of the navy, and the reduction in its death-rate contributed to the victories in the Revolutionary War. Sir Gilbert states at a later period that "if some new means of preserving the health and lives of seamen had not been discovered and put into practice, the whole stock of them must have been expended before the conclusion of the Revolutionary War—that is, between the years 1793–1815." The improvement has continued notwithstanding the changes in the warships, and instead of the mortality being 1 in 7 it is now about 1 in 310. We know what the navy has done in the great war of 1914–18.

We are apt to forget the lessons of the past. For instance, in the Mesopotamian campaign there would have been no scurvy if the history of the navy in relation to that disease and its abolition in the latter part of the eighteenth century had been borne in mind and acted upon. It should not have required the valuable and admirable work of the Lister Institute to resuscitate the necessity of the supply of vitamines in the foodstuffs supplied to the army. One is apt to forget that the use of cinchona bark as a prophylactic goes back to at least the early part of the eighteenth century. Dr. James Lind, the pioneer of sanitary reforms in the navy, more than 160 years ago mentions that the continuous use of bark is an effective preservative against a relapse of malarial fever, and that "on the coast of Guinea the factories were furnished with proper quantities of the bark by the late African Company, which was taken by way of

precaution during the rainy and sickly season, and it was attended by remarkable success with such as could be brought to a regular course of life and refrain from eating such quantities of animal food as they were wont to do in England, which yearly destroyed many on that Coast" (Guinea).

One sometimes wonders whether the many relapses of the soldiers from Salonika and other seats of war were due to our preference for the alkaloids of quinine, for which there has been an unprecedented demand, and some of which may have in their preparation lost the complete qualities of the cinchona bark, which itself varies in quality. Are we quite sure that the procedure which destroys the vitamines of canned food may not affect some of the properties of the alkaloids?

The Crimean War, with its tragedies owing to want of organisation, sanitary and otherwise, and the success which followed the work of the Sanitary Commission, of which Miss Nightingale was an important member, led to important sanitary reforms in the army at home, and later to a Royal Commission to inquire into the health of the army in India, which disclosed a deplorable condition of things and a death-rate of 69 per 1000, although in the later years of the Honourable East India Company, the conditions in regard to the health and comfort of the soldier had been materially improved and the mortality had been reduced from 80 to 69. In consequence of this report, remedial measures were at once applied to the army in India and were extended to the towns and districts adjacent to the cantonments.

The Beginnings and Progress of Sanitary Organisation in India.

The Royal Sanitary Commission were convinced that if sanitary measures were applied to India under an organised public health service the health of the people of India would in time reach a high standard. It was recommended that such an organisation should be created both in urban and rural areas in India. In 1864 a sanitary commissioner was appointed for each province in India for the purpose of improving the sanitary conditions of the people, and the civil surgeon, who is the Indian Army surgeon, was empowered to advise the civil commissioner of the district on sanitary questions, and later to act as sanitary adviser to municipalities newly formed for the purposes of local self-government. Gaols were also placed under medical supervision, and special health officers were appointed for Calcutta, Bombay, and Madras. Later a very important addition was made by the establishment of central boards of health in each province having for their function the drawing up of special schemes of water-supply and drainage. The work which the organisation here described has been able to accomplish is very creditable, considering that a province in India is sometimes about the size of France, and a civil surgeon's district in which he practises is often as large as a third of Scotland. Vaccination was at first the chief concern; then followed the introduction of conservancy, drainage, and water-supply into some of the more important towns, the registration of deaths, the compilation of statistics, and the regulation of large fairs and pilgrimages which experience showed to be always dangerous centres of disease.

The effect of these and subsequent health measures has been to reduce the death-rate of British troops from 69 to 4·59, of Indian troops from 20 to 6·78, and of prisoners from 82·7 to 30·8 per 1000. Notwithstanding these successes, it is obvious that an organisation which consists of a sanitary commissioner, sanitary engineer, and sanitary board for each province, even with the assistance of the civil surgeons, is quite unequal to the task of dealing with the sanitary administration of these enormous populations, both rural and urban. It must be remembered that civil surgeons of districts, or, as they are called in the Madras Presidency, "district medical and sanitary officers," who ordinarily during peace are officers lent temporarily by the Military Department to the local governments, are expected to attend to the medico-legal work of the district, the medical necessities of civil officials, perform the executive medical and surgical work of all local hospitals and institutions, including gaols, and hold administrative and inspecting charge of numerous hospitals and dispensaries scattered throughout their districts. ..... It is certain that the organisation was quite incapable of dealing with an epidemic even though a sanitary commissioner was appointed with the Government of India. The defenceless state of the country invited attack from any epidemic disease indigenous or imported into the country. It was these considerations that induced me to bring forward in 1894, at the Indian Medical Congress, a scheme for the special sanitary service for the civil population of India. The most advanced sanitary administration at that time was that presided over by Colonel W. G. King, C.I.E., as Sanitary Commissioner of the Madras Presidency, in which there were district sanitary officer and assistants. Here, in 1881, on the recommendation of the then sanitary commissioner (Cornish) there was attached to each district medical and sanitary officer, an assistant surgeon capable of taking charge of the headquarters station during the absence of that officer on sanitary duty in his district. To this then existing staff, in 1893, Colonel King advised the compulsory addition of technically trained sanitary inspectors qualified by examination. The scheme was sanctioned in 1894, and the men now number over 600. But his efforts to secure permanent appointments for these beyond municipal areas, although approved by the Madras Government and successful in some districts, was largely inhibited by local authorities. The surplus men now form a reserve for epidemic duties on the old principle of locking the door after the horse is stolen, and may find, after further technical training, ad hoc appointments as deputy inspectors of vaccination. By later elaboration of staff (1904) there was secured sanction by him from that Government for a second assistant surgeon attached to each district medical and sanitary officer intended solely for sanitary duties in the district, as well as a public works overseer capable of making plans and estimates to aid the district medical and sanitary officer in formulating recommendations for minor sanitary and anti-malarial works. Here again there has been some inhibition by local authorities of districts. So that even in this comparatively advanced area of India there is failure to reach the reasonable ideal suggested by me at the congress of 1894—namely, that a specially trained and separate sanitary service should be arranged for, quite independent of physicians, in connexion with the hospital or of those in private practice; that there should be schools of hygiene and preventive medicine, and also of sanitary engineering, and that diplomas should be granted to those who were trained in these schools, and fourthly, that laboratories for research should be established in various parts of India. It was approved by the Government of India in 1895. Colonel King, in a remarkably able and statesmanlike address before the East India Association in July, 1914, points out that, notwithstanding the advice of the Royal Commission conveyed in the report of 1863, the urging of provincial sanitary commissions, successive sanitary commissioners with local governments, the first Indian Medical Congress, and the Royal College of Physicians of London, the proposed organised efforts of 1914 were confined to municipalities which only represented the provision of a sanitary service for the protection of 10 per cent. of the population. It may be asked, what is to become of the other 90 per cent.? As shown by Colonel King, the death-rate in India varies in 64 towns from 30 to 70 per mille and the expectation of the young Indian at birth is 23½ years less than that of an English child. He mentions that there are annually one million deaths from malaria and over a quarter of a million deaths from cholera, that small-pox destroys thousands of lives annually, and that there were in the 16 years since plague began in 1896 some 8 million deaths from that disease. This number has since increased to 10 millions. No one can be satisfied with this condition of affairs. The scheme is to have 25 sanitary commissioners, 12 deputy sanitary commissioners, 34 first-class medical officers of health, and 104 second-class medical officers of health for a country which, excluding Russia, is the size of Europe and has a population under direct British rule of over 244 millions and a total population of over 315 millions. The area of British India is 1,097,901 square miles, against 58,308 of England and Wales. Compare these figures with England and Wales, which has 1700 local medical officers of health, 40 county medical officers, and 26 medical inspectors, besides the inspectors attached to the Board of Education and the Home Office, and which now has an additional staff under the new

Ministry of Health. The war cut short even this Liliputian scheme of the Indian Government, and the last announcement is that it will be put into operation as soon as possible. One cannot recognise this as an adequate service for India, and I am convinced that until a proper sanitary service for India is formed, which would be a splendid outlet for young Indian medical men and women, there will be no real progress and India will remain defenceless against epidemics. The root of the matter is there is no Minister of Health in India whose duty is concerned solely with sanitation and the health of the population. Public health should not be as it is in India, a by-wash of the education department in which it is placed as a sort of miscellaneous item along with archæology, and in which the money goes to education and public health is starved and in which the topsy turvy doctrine is held that the people must be educated before they can be protected against disease. No country has waited until its people are educated before it introduced sanitary reforms, and least of all England. Major Justice, the Sanitary Commissioner with the Government of Madras, in his official report for 1911 states that "to wait till the people are educated will be to indefinitely postpone the evil," and Dr. Turner, the late health officer of Bombay, remarks that the Millennium will have arrived when the people voluntarily carry out sanitary matters. The only education in sanitary matters the people understand is sanitary laws and by-laws, and this is the form education should take. As quoted by Colonel King, the Education Minister, thus defines the position: "Our first and signal objective is to educate the people as to the value and the necessity of measures for protecting them in their homes and their lives and those dearest to them from the ravages of plague and malaria, cholera, and other communicable diseases, and all the miseries which follow in their train. Fortified by the results of research in India, we can leave the future with confidence to preventive medicine and preventive sanitation." When a question was asked in the Bengal Legislative Council what this implied, the reply was that protected water-supplies were to be arranged for the people *when they have been taught to appreciate them.* It is difficult to have any patience with such an attitude of mind, and it is no matter of surprise that with such views the troops in Mesopotamia were not furnished with the ordinary requisites and organisation to protect them from the ravages of disease and all the miseries which followed in their train. They were left to be educated. Research can be made an excuse for doing nothing. My views concerning this in regard to India were expressed some years ago in the following terms: "We hear a good deal about research, and research is much cheaper than the *application* of sanitary matters." No one has a greater respect for research than I have. A few years ago I urged that sanitary research and administration should go hand in hand. That is the real position. At the present time a good deal of research has been done, very valuable in its way, and, no doubt, it will be fruitful of results if applied; but I consider that the application of sanitary measures on the basis of what we already know is the urgent need of India. I will give you an illustration of this. Supposing the Government of India had been asked to construct the Panama Canal, the kind of proceeding they would have introduced with the present regime would have been to send out men to make researches—they would not have based their actions on the discoveries already known of Ross and Findlay, as the Americans have done. These investigators would have found that the mosquitoes there were a little different from what they were in other places where malaria and yellow-fever existed, and under the circumstances the recommendations would have been made to postpone the matter until a further discovery was made. I am convinced that sanitation will not receive adequate attention in India until there is a Minister of Health whose duty is concerned solely with sanitation and the health of the population. Then will the organisation required for urban and rural sanitation be formed and India will at last be able to throw off the incubus of plague and cholera and protect itself against other preventable diseases.

The Egyptian campaign led to the formation of a civil sanitary service in Egypt, which did some excellent work but which is, as shown by the Commission of which Colonel Balfour was chairman, inadequate for the public health of the country. The reorganisation which this Commission recommends covers what a public health service should be under a Minister of Health. It is a most complete scheme, and one worthy to be followed in other countries, modified, of course, according to local requirements. I am glad to see that the United States of South Africa are to have a Minister of Public Health and a General Public Health Act. It is, indeed, a great advance.

A BROADER VIEW OF TROPICAL HYGIENE NEEDED. AN IMPERIAL HEALTH MUSEUM.

Professor Simpson then discussed the housing question in our foreign and tropical possessions, claiming that our outlook in regard to native populations must be wider and more sympathetic from a health point of view than it hitherto has been, and he concluded an address, which was a powerful plea for the realisation of our material responsibilities in the matter of sanitary science, in the following words:—

We have an illustration in West Africa, though its sanitary progress has been set back temporarily by the war, that with even a small but well-trained sanitary service supported by the Local Government and encouraged by the Colonial Office with the advice of the Medical and Sanitary Committee there can be a great change effected in a comparatively short time. It is ten years since this sanitary service was created. In that time water-supplies have been and were being introduced, drainage was being attended to, breeding places of mosquitoes were destroyed, extensive marshes were filled up, building laws were enacted, town planning was engaging the attention of the authorities, laboratories were established; a special research laboratory was built in Nigeria and has been carrying out valuable investigations; a Commission on Yellow Fever has been a means of having the circumstances connected with outbreaks investigated and the disease promptly dealt with. The result has been a healthier life for the Europeans and a greater freedom from disease for the African. There is much more work to be done, and I hope that there will soon be a college of medicine and hygiene established where the African can be educated in both these subjects, and that he will then be able to assist in the work of sanitation and in the medical treatment of his fellow countryman. Much of this success is due to the active and harmonious coöperation of the officials of the Colonial Office with the expert members of the medical and sanitary committee, whose president has been for these ten years Sir Herbert Read, one of the Under Secretaries of State for the Colonies, and the interest of the different Secretaries of State in the work. The function of the medical and sanitary committee has been extended to East Africa. I should like to see it extended to the whole of the Crown colonies with suitable additions to its number of members, so that it might act as a Ministry of Health for them. The East and West African colonies, which before the war were more than three-quarters the size of British India and which, by the additions since the war, are larger than that dependency, are not the only Crown colonies that need supervision and advice in health matters.

Following on this I should like to see a great colonial medical and sanitary service, the members of which well trained in tropical diseases and their prevention in our tropical schools should be available after good service and experience in one colony for transfer to others if required. Associated with this service should be a local service of native medical men and sanitary inspectors who have been trained locally and whose knowledge of their compatriots would be of great assistance to the hospital physician, sanitary officer, and Government and their health administration and their campaign against disease.

I should like to see a league of the Local Governments of the Crown colonies vying with one another to improve the conditions of life of the inhabitants under their charge.

When His Majesty King Edward VII. died I wrote to the Lord Mayor of London, who was chairman of a committee to consider a suitable memorial to commemorate his reign. I pointed out that His Majesty had always taken an active interest in the health of his people at home and in the tropics. When Prince of Wales he had been a member of the Royal Commission on the Housing of the Working Classes. He had interested himself in the Commission to India to inquire into leprosy, and he had been President of the International Congress of Hygiene held in London in 1891.

I venture to suggest an Imperial Health Institute for research with an Empire Health Museum, on a similar or larger scale than that of the British Museum or the Victoria and Albert Museum. My suggestion was not accepted at the time. Now that there will be an Empire War Memorial worthy of the far-reaching victory which has secured safety for us all, I would suggest that in addition to the War Memorial there should be a Peace Memorial in the form of an Empire Health Museum in London in every respect to celebrate the means by which we can triumph over preventable diseases, which, in the long run, is far more destructive to human life and to health than even the greatest war.

The Empire Health Museum would contain models, plans, and other arrangements for illustrating the causes of preventable diseases, the conditions under which they spread and the methods by which they can be prevented; the diseases communicated by animals, insects, and vermin; the diseases of occupations liable to occur in different industries, manufactures, trades, foundries, workshops, and mines, and the known methods of prevention. Side by side would be be healthy houses, cottages, flats, and huts, contrasted with those that are unhealthy, both at home and in other parts of the Empire; slums and garden cities, town planning and insanitary areas; schools, healthy and unhealthy; foods and their adulterations; alcohol and tobacco and their effects in excess; infant and child welfare; mothercraft; water-supplies; clean and pure milk as contrasted with the dirty and adulterated article, &c. There would be tropical, industrial, domestic, personal, housing, urban and rural, and preventable diseases sections. The museum would be open to all. The stonemason, the pottery and earthenware worker, the wool-sorter, the workers in hides and horsehair and flax, the dairyman, the schoolmaster, the housewife, the painter, the miner, the brass-founder, the electrician, and the worker in any industry or trade should be able to go and see the risks, if any, to which he or she may be subjected, and the means by which they may be prevented. There should be sections to represent not only the British Isles but also Canada, Australia, South Africa, India, Burma, and our Crown Colonies and Protectorates. Lectures and demonstrations illustrated by models and the kinematograph should be given, and there should be attached a bureau of information.

The museum would be a standing reminder to our administrators that next to the safety of the Empire is the health of the people.

NOTES ON AMŒBIC DYSENTERY

FROM THE POINT OF VIEW OF MICROSCOPICAL DIAGNOSIS.

BY H. A. HAIG, M.B., B.S. LOND., M.R.C.S.

IN the successful examination of specimens of stools sent to the laboratory for report upon presence of protozoa it is necessary (*a*) for the specimen to be quite fresh; (*b*) that a glass receptacle be used in preference to a metal one; (*c*) that no antiseptic should have been added. If by any chance the specimen cannot be examined at once it should be placed in an ice-incubator, as it has been shown that degenerative changes take place rapidly in amœbæ, &c., at ordinary room temperature or at 37° C. incubator temperature, owing partly to bacterial invasion and partly to intrinsic autolytic changes. A fresh preparation should always be examined in the first instance and will usually establish the diagnosis, but if any doubt exists as to identity of species (see notes on staining methods at end) an iodine preparation—e.g., Weigert's solution: iodine 1 g., Potassium iodide 2 g., distilled water 100 c.cm.—or a fixed and stained smear should be made. Where amœbæ are encysted diagnosis becomes at times a matter of no small difficulty. The naked-eye character of stools is not an entirely reliable clue to the type of dysentery, and in all cases microscopical examination should be carried out, since both amœbic and bacillary dysentery may co-exist. Pus from amœbic abscesses in the liver or elsewhere is usually examined fresh, but in the first pus removed it is quite common to miss amœbæ; although a few days later the discharge from the drainage-tube may show them, unless emetine has been injected into the abscess cavity or given subcutaneously.

Encysted Amœbæ.

For the examination for encysted amœbæ small portions of the stool can be emulsified in (*a*) normal saline; (*b*) iodine solution. As a rule the nuclei of *Entamœba histolytica* cysts do not show up in a fresh preparation, but iodine renders them visible. Cysts of *E. coli* need no iodine for demonstration of nuclei, although this reagent brings them out more clearly. Other protozoa, such as *Lamblia* or *Trichomonas* when motile, are best examined fresh, but encysted *Lamblia* show up well when treated with iodine, the nuclei and division between the two parasites being rendered apparent. According to Wenyon, cysts suspected to be those of *E. histolytica* should always be measured with the micrometer eyepiece, as a very constant figure obtains (10μ–14μ) in these cysts.

After being in an ice-incubator for some time motile amœbæ contract and become non-motile temporarily, but motility can often be restored by placing the specimen for a short time in the 37° C. incubator, or in warm climates by simply leaving it at laboratory temperature for an hour or so. Gentle warming of the slide upon which the fresh preparation has been made is sometimes sufficient to restore motility.

Microscopical Diagnosis of Amœbic Dysentery.

The microscopical diagnosis of amœbic dysentery from a fresh preparation presents few difficulties as a rule, but confusion may arise when the same stool contains both *E. histolytica* and *E. coli*. Moreover, in mixed cases of amœbic and bacillary types *E. histolytica* may be so overshadowed by the presence of large macrophages and cellular exudate of various types of cell that it may be missed altogether, the case being reported upon as a pure bacillary infection. Again, a small type of *E. histolytica* (so-called *E. minuta*) is occasionally met with, more especially in early cases, accompanied by the presence of encysted forms, and this type is sometimes missed. In addition a first specimen may be almost or quite negative, whereas later specimens may show relatively enormous numbers of amœbæ. It is also possible for *E. histolytica* (motile and cysts), *E. coli* (motile and cysts), *Lamblia*, and *Trichomonas* to be present in the same specimen, possibly in symbiosis, where *E. histolytica* has been found, but the stools still retain their muco-sanguineous or muco-purulent character under emetine. Bacteriological search for dysenteric bacilli must be carried out also in any case with a high temperature and marked constitutional symptoms which cannot be referred to other causes (liver abscess, blood infection, &c.).

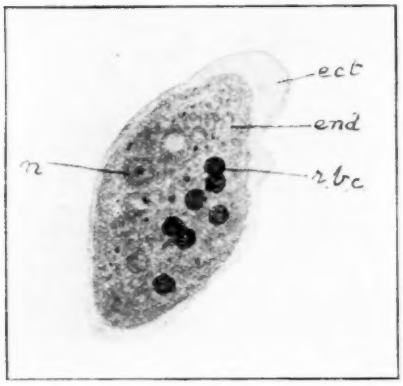
Differential Characteristics: E. histolytica, *Motile and Encysted.*

Motile forms.—E. histolytica occurs in fresh preparations as an actively amœboid mass of protoplasm which has: (1) a clear refractile ectoplasm; (2) a somewhat granular and vacuolated endoplasm containing a nucleus, at times one or more erythrocytes, and a few food-granules. Sometimes a semi-digested erythrocyte may be seen surrounded by a "digestive vacuole." The chromatin of the nucleus is scanty and lies next the nuclear membrane in the form of several rod-like or angular masses, and a nucleolus or plasmosome is usually present. The nucleus is not easy to make out unless dark-ground illumination be used, but the vacuoles are sometimes very prominent and numerous (see Figs. 1 and 6). The pseudopodia are pushed out from the ectoplasm very rapidly, the endoplasm flowing into them at once; as a rule the protrusions appear more on that side towards which the amœba is moving, but at times they occur irregularly and at several points at once. Entamœbæ, usually in groups but sometimes scattered, are often seen in a mass of mucus, containing also red cells. The presence of erythrocytes engulfed by the amœba is diagnostic, but the latter should not be confused with large macrophages (see Fig. 5) with red cells sticking to them. Such macrophages rarely, if ever, show motility, although whilst still in the intestines or submucosa they must be endowed with a certain degree thereof.

Fixed and stained preparations of *E. histolytica* (see note infra) are necessary for a clear view of the details of structure, but artefacts appear however carefully fixation has been carried out. Such preparations are, however, useful for reference, especially with regard to the chromatin content of the nucleus.

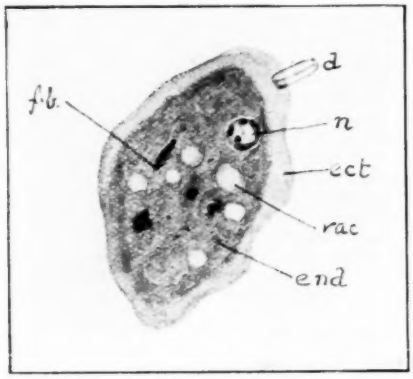
MICROSCOPICAL ILLUSTRATIONS OF ENTAMŒBA HISTOLYTICA AND ENTAMŒBA COLI.

FIG. 1.



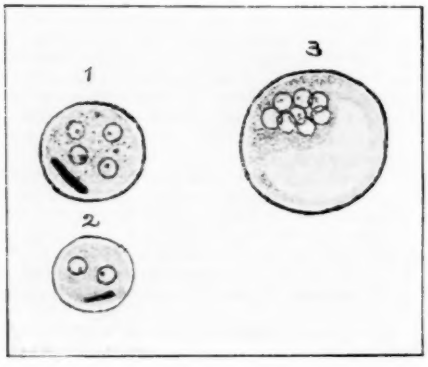
E. histolytica, motile, showing *ect*, Ectoplasm; *end*, Endoplasm; *n*, Nucleus; *r.b.c.*, Engulfed red corpuscles.

FIG. 2.



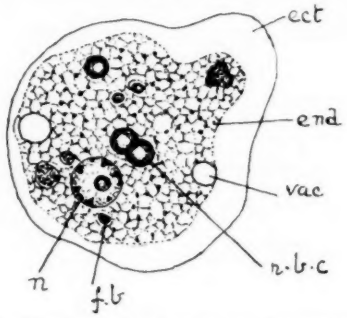
E. coli, showing *ect*, Ectoplasm; *end*, Endoplasm; *vac*, Vacuoles; *n*, Nucleus; *d*, A diatom; *f.b*, Engulfed foreign bodies.

FIG. 4.



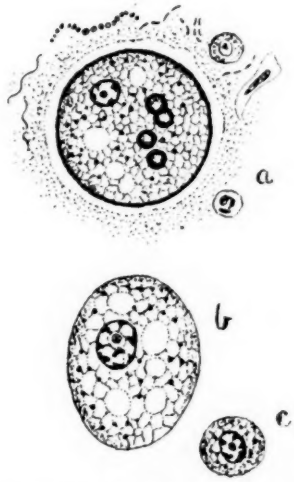
Encysted amœbæ: (1) Cyst of *E. histolytica* with four nuclei. (2) Cyst of *E. histolytica* with two nuclei. (Note iodophil body in both.) (3) Cyst of *E. coli*, showing eight nuclei.

FIG. 3.



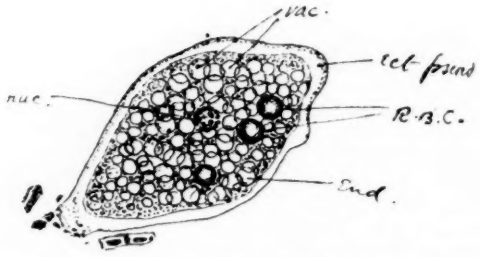
E. histolytica, fixed and stained, to show structural details.

FIG. 5.



a, Contracted *E. histolytica*, fixed and stained. The space immediately surrounding the amœba is due to shrinkage and is not the ectoplasm. *b*, Macrophage from cell-exudate of bacillary dysentery. *c*, Smaller cell from same.

FIG. 6.



E. histolytica showing highly vacuolated endoplasm.

In a fresh preparation motility ceases after a time and the amœbæ contract into spheroidal masses (see Fig. 5) in which erythrocytes are still quite visible, and at times, in rare cases, encysted entamœbæ are to be found with motile amœbæ in the same preparation.

Cysts.—The cysts (Fig. 4) of *E. histolytica* are small, refractile, spheroidal bodies, measuring about 10μ–14μ, i.e., nearly twice the diameter of a red corpuscle. In a fresh preparation they appear almost homogeneous, but although careful examination will sometimes reveal the nuclei, it is always as well to confirm by an iodine preparation. Usually four nuclei are present, but uni- and bi-nucleated cysts are sometimes seen. In addition, iodine stains a somewhat rod-shaped mass (iodophil substance) in the cyst which is absent from cysts of *E. coli*. The search for cysts is at times a most tedious performance, but since cases of liver abscess generally occur in those instances where a cyst-carrier has been missed the importance of finding even one cyst far outweighs the labour spent.

E. coli, *Motile and Encysted.*

Motile forms (Fig. 2).—*E. coli*, an apparently harmless occasional inhabitant of the large intestine, is as a rule larger and of more sluggish motility than *E. histolytica*. Erythrocytes are never engulfed, and the amœba has not the same power of "eroding" (by means of cytolytic enzymes) the epithelium and capillaries of the mucous membrane, as *E. histolytica*. Consequently in the absence of dysenteric bacilli or protozoal parasites other than *E. coli* or of a purely secondary cause, erythrocytes are not found in the stool. The endoplasm of *E. coli* is vacuolated and granular; ingested vegetable matter is nearly always present (diatoms, vegetable debris, &c.), and one pole of the amœba will often attach itself to a mass of mucous debris. *E. coli* is frequently found co-existing with *E. histolytica*.

Cysts.—The cysts of *E. coli* are larger than those of *E. histolytica* (15μ–20μ), and are often very numerous; they possess eight well-defined nuclei, visible even in a fresh preparation, but better seen in iodine. They are not always quite spherical, being at times oval and rather variable in size.

Blastocystis hominis (a vegetable organism) may at times be confused with cysts of *E. coli* or *E. histolytica*. They are, however, often larger (5μ–15μ) and the cytoplasm is arranged in two polar crescentic masses, containing four nuclei in each.

Fixation and Staining of Amœbæ, Motile and Encysted.

Thin smears from the fresh stool, selecting, where present, a portion containing mucus and blood, are made upon coverslips, and floated, without drying, smear downwards upon the following fixing solution:—

Corrosive sublimate (saturated aqueous solution) 2 pts.
Absolute alcohol ... ... 1 pt.

Fixation is complete in about 30 minutes. The smears are then placed film upwards in *iodised* alcohol in order to remove the last traces of sublimate; washed in distilled water; then stained as follows[1]: (1) Soak for some hours in a 4 per cent. solution of iron-alum (made with *violet* crystals); (2) wash in distilled water; (3) stain in Heidenhain's hæmatoxylin for several hours (or over night); (4) wash in distilled water; (5) place in 1 per cent. iron-alum solution until decolorisation has reached a satisfactory stage; (6) wash in distilled water and counter-stain with 5 per cent. aqueous eosin solution; dehydrate through the alcohols, clear in xylol, and mount on a slide in Canada balsam.

[1] Method partly modified from Wenyon, THE LANCET, Nov. 27th, 1915.

THE BORSTAL SYSTEM.—The method of dealing with young offenders of the law known as the Borstal system has recently been discussed in the public press, and the annual report of the Borstal Association, which has just been issued, will be read with interest. During the year which ended March 31st, 1919, 610 boys were released to the care of the association, and of these 499 cases proved satisfactory, 66 unsatisfactory, and 45 have been reconvicted. Of 113 girls 58 have proved satisfactory so far, 40 have been unsatisfactory, and 15 have been reconvicted. The report, which can be obtained from 15, Buckingham-street, Strand, W.C., makes an appeal for financial support, and is a document which should be carefully read by all who are interested in the coöperation of the State with voluntary workers in penology.

ON THE MECHANISM OF IMMUNISATION,

WITH SPECIAL REFERENCE TO LIPASE.

BY J. A. SHAW-MACKENZIE, M.D. LOND.

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SOME years ago I[1] suggested that the increase of tissue erepsin noted by Vernon[2] in cases of cancer, as well as in tuberculosis and septicæmia, might be a defensive response of the body. The same principle of a defensive mechanism underlies the well-known work of Abderhalden, whose views have been much criticised, although his facts have been confirmed in certain directions. During the past few years my attention has been concerned with another enzyme—namely, lipase, the lipolytic or fat-splitting ferment, and I[3] have suggested that it is an important factor in the defence of the body against cancer and bacterial invasions.

Summary of Investigations.

This work may be briefly summarised as follows: When serum is added to glycerine extracts of pancreas, or to pancreatic juice itself, fat-splitting is markedly accelerated. The serum itself does not split fats, but contains an activating agent. In progressive and advanced cancer this power of the serum is decreased, and at the same time its antitryptic power rises. Accompanying improvement or recovery the accelerating action on lipase is increased in the serum, whilst the antitryptic power falls. The same holds good in those cases of infectious disease which I have examined. The lipase of glycerine extracts of pancreas is separable into two parts by filtration (O. Rosenheim[4]); the residue on the filter (inactive lipase) is thermolabile; the filtrate contains a thermostable coenzyme. Each by itself has no action on fats, but on mixing the two parts together the fat-splitting action is raised to its original value. Subsequently, I[5] adduced evidence that the lipase of the juice itself is separable into these two components, and that most of the enzyme in the freshly secreted juice is in an inactive condition (pro-lipase). There are a number of substances, of which the most familiar are the bile salts, which can take the place of the coenzyme and activate pro-lipase. I found that diluted serum (or auto-serum), whether previously heated or not, possesses the same activating action on lipase, whether that enzyme is in an extract of pancreas or in the natural juice.

Inoculation of animals with normal and cancerous material or with normal and cancerous serum is followed by a similar increase in the power of their blood to accelerate fat splitting; a similar increase is noticeable in mice which have proved "negative" to mouse tumour inoculations or have recovered spontaneously. I have assumed in such observations that the introduction of a normal or specific activator or coenzyme into the blood activates the pro-lipase of the tissues, which, being common to all, and thermolabile, may be compared to complement. This led me to suggest treatment of inoperable cancer in man by injections of the patient's own serum, and believing as I did in the protective action of the fat-splitting factor I suggested its use later in the treatment of the wounds of war.

Lipase in Therapeutic Immunisation.

I have been led to take up the question again on account of an article by Sir Almroth Wright in THE LANCET of March 29th, 1919 (p. 516), on therapeutic immunisation. He does not allude in that article to any part that might possibly be played by the fat-splitting enzyme. I believe that it plays an important rôle in treatment by autogenous vaccines whether injected into the tissues or intravenously. Vaccines and antitoxic sera in vitro increase the fat-splitting properties of pancreatic extracts in varying degree. Their action in this direction is less than that of serum, and their antitryptic power is small or absent. In the process of sterilisation by heat the bacterial enzymes are destroyed, but even 100° C. is not destructive to the thermostable activating material which they contain. From this point of view part of the value of the vaccine must be due to this material, and its power to increase fat-splitting is a factor in its protective mechanism.

Attention may here be drawn to the work of J. W. Jobling and W. Petersen.[7]

These observers have pointed out that in experimental animals the intravenous injection of bacteria, protein split products, and other substances "is almost invariably followed by more or less marked mobilisation of serum

protease and usually of lipase (esterase). In the patient a similar reaction occurs following the intravenous injection of vaccines and proteoses, but not to the same degree nor with the same regularity as in animals. ..... The influence of the fat-splitting ferments mobilised is as yet obscure. In the ultimate analysis, of course, we must turn to ferments of this nature for the attack on the invading organism, because it is more than probable that the actual surface of the bacterium consists largely of lipoids, or intimate lipo-protein combinations, for the destruction of which fat-splitting ferments are essential. In certain infections with lipoid-rich organisms such as tubercle and lepra bacilli, the clinical demonstration of the association of a high lipase titre in the serum, with a favourable prognosis, has been well established." In interpreting the results of a protective lipolytic mechanism the protective action of the products of fat-splitting or fatty acids in the tissues in cancer (Freund [8]), as well as their inhibitory action towards bacterial growth (Taylor [9]), must not be ignored.

In Sir Almroth Wright's method a donor's blood was immunised in vitro by an autogenous vaccine from the case, the serum was separated and transfused, with immediate success; or, as described in Sir Almroth Wright's preliminary test, "portions of the donor's blood were digested for three hours in vitro with a series of graduated dilutions of a staphylococcus and also of a streptococcus vaccine." Of all the sera thus obtained the serum of the blood portion which had been digested with 1000 staphylococci per c.cm. gave the best bactericidal result when inoculated with a mixture of staphylococcus and the patient's own streptococcus.

Experimental Evidence.

These statements have led me to repeat an experiment I made in the course of my above-mentioned work, in which the addition of pancreatic coenzyme to serum appeared directly to produce the fat-splitting enzyme. In 1914 1 c.cm. of coenzyme with 3 c.cm. of water was added to 1 c.cm. of apparently normal serum of a patient who, some years previously, had been operated upon for breast carcinoma. The mixture was incubated for half an hour at 37° C., and then 5 c.cm. of olive oil emulsion were added. After further incubation for 18 hours, 3·1 c.cm. of decinormal potash were required to neutralise the fatty acids liberated. The serum and the coenzyme alone, after being brought up to volume with water and added to 5 c.cm. of the emulsion, under the same conditions of experiment and at the same time, required only 0·5 c.cm. respectively of the decinormal potash.

Previously to this, in 1911, a similar experiment with horse serum gave me a doubtful result which possibly may be explained by the relatively small amount of complement in horse serum. At the same time my notes show that bile salts gave no better result than the coenzyme, but with sodium oleate 3 c.cm. of the decinormal potash were required to neutralise the fatty acids liberated. In the result with coenzyme it was considered that either a slight amount of lipase or of pro-lipase in the serum was accelerated or activated by the coenzyme, or the slight inactive residue present usually in the coenzyme itself was activated by the serum.

In the following tables are given the results I have obtained in the past summer which confirm my former result with coenzyme, and I give the results of a few experiments made with the addition of vaccine to serum or blood. The technique is that which I have described in previous communications. The coenzyme or vaccine was added to the serum; the mixture brought up to volume with 0·85 per cent. NaCl solution and incubated for three hours. The olive oil emulsion was then added and the mixture incubated at 37° C. for a given time, usually 18 hours; alcohol was then added and the liberated fatty acids estimated by titration with decinormal potash, phenolphthalein being used as the indicator. The figures given are the number of cubic centimetres of the decinormal potash required to give the neutral point. A good olive oil and a good emulsion are necessary. The latter is effected by neutralising the amount of free acid present in the oil—0·5 c.cm. of decinormal potash for 5 c.cm. oil being usually required. When the coenzyme or the vaccine was added to blood the mixture after incubation was centrifuged, brought up to volume, and added as before to the emulsion. In all cases the serum, coenzyme, and vaccine, brought up to volume, were examined separately and the results given, after addition to the oil emulsion and incubation, under the same conditions and at the same time of experiment.

TABLE I.—*Action of Pancreatic Coenzyme and of Vaccine (Staphylococcus) on Serum and Blood.*

—	Coenzyme.	Vaccine staph.	Serum (S.), Cit. blood (C.B.) Whole blood (W.B.).	NaCl 0·85 %	Olive oil emulsion.	N/10 KOH required.
	c.c.	mills. c.c.	c.c.	c.c.	c.c.	c.c.
Guinea-pig.	—	—	2·5 (S.).	2·5	2·5	0·5
	1	—	" "	1·5	2·5	*3·3*
	1	—	—	4·0	2·5	0·6
	—	2500	2·5 (S.).	1·5	2·5	*1·4*
	—	"	—	4·0	2·5	0·2
Rabbit.	—	—	2·5 (S.).	2·5	2·5	0·5
	1	—	" "	1·5	2·5	*2·6*
	1	—	—	4·0	2·5	0·7
	—	5000	2·5 (S.).	1·5	2·5	*4·1*
	—	"	—	4·0	2·5	0·4
Sheep.	—	—	5 (C.B.) (3·5 c/g/d.)	1·5	2·5	0·5
	1	—	" — "	0·5	2·5	*2·3*
	1	—	—	4·0	2·5	0·8
	—	5000	" — "	0·5	2·5	*1·2*
	—	"	—	4·0	2·5	0·2
Man.	—	—	2·5 (S.).	2·5	2·5	0·5
	1	—	" "	1·5	2·5	*2·8*
	1	—	—	4·0	2·5	0·5
	—	5000	2·5 (S.).	1·5	2·5	*1·1*
	—	"	—	4·0	2·5	0·3
	1	—	5 (W.B.) (2·0 c/g/d.)	2·0	2·5	*1·0*
	—	5000	5 (W.B.) (2·2 c/g/d.)	1·8	2·5	*0·9*

TABLE II.—*Action of Living Staphylococci on Serum and on Blood (Man).*

The vaccine was found in control subculture to have been not entirely killed by heating at 60° C. for one hour. The experiment was repeated with living staphylococci with a corresponding result.

Staph.	Serum.	Blood.	NaCl 0·85 %	Olive oil emuls.	N/10 KOH required.
Mills. c.c.	c.c.	c.c.	c.c.	c.c.	c.c.
—	2·5	—	2·5	2·5	0·5
5000	2·5	—	1·5	2·5	*2·2*
"	—	—	4·0	2·5	0·3
"	—	5 (3·5 c/g/d).	0·5	2·5	*1·1*

TABLE III.—*Action of Vaccine on Rabbit Serum and Blood, and on Serum and Blood (Man).*

Staph.	Rabbit: Serum (S.), blood (B.).	Man: Serum (S.), blood (B.).	NaCl 0·85 %.	Olive oil emuls.	N/10 KOH required.
Mills. c.c.	c.c.	c.c.	c.c.	c.c.	c.c.
—	2·5 (S.).	—	2·5	2·5	0·7
5000	"	—	1·5	2·5	*5·6*
"	—	—	4·0	2·5	0·3
"	5 (B.) (3·5 c/g/d).	—	0·5	2·5	*2·2*
"	—	2·5 (S.).	2·5	2·5	0·5
"	—	"	1·5	2·5	*3·1*
"	—	—	4·0	2·5	0·3
—	—	5 (B.) (2·2 c/g/d).	2·8	2·5	1·3

TABLE IV.—*Action of Vaccine Staphylococcus (Repeated); Action of Vaccine Typhoid, and Action of Heated Malignant Serum, on Serum (Preliminary).*

The latter experiment is one of two, with corresponding results.

Staph. (S.), typhoid (T.).	Serum: Malgnt., heated (M., H.), rabbit (R.), man (M.).	NaCl 0·85%.	Olive oil emuls.	N/10 KOH required.
Mills. c.c.	c.c.	c.c.	c.c.	c.c.
—	2·5 (R.)	2·5	2·5	0·5
5000 (S.).	"	1·5	2·5	*8·8*
—	—	4·0	2·5	0·2
1000 (T.).	2·5 (R.)	1·5	2·5	*2·2*
"	—	4·0	2·5	0·2
—	2·5 (M.)	2·5	2·5	0·5
—	1·0 + 4 NaCl sol. heated to 100° C. (M., H.), 2·5 (R.)	—	2·5	*2·2*
—	Ditto (M., H.), 2·5 (M.)	—	2·5	*2·2*
—	Ditto (M., H.)	2·5	2·5	0·2

It would appear from the results of the investigation described above that the addition of pancreatic coenzyme and of vaccine to serum (or blood) exerts in vitro a lipolytic

or fat-splitting action. It was ascertained further (one experiment) that in both cases when the living streptococcus (0 05 c.cm. of approximately 100,000,000 per c.cm. suspension) was subsequently added to 5 c.cm. mixture of the serum, treated with coenzyme or with vaccine, incubated for 18 hours, and subcultured, there was growth, but an inhibitory bactericidal action was exerted compared with controls of inoculated serum and of sodium chloride solution, similar to the inhibitory effects described by Sir Almroth Wright.

In the above experiments a staphylococcus vaccine has been chiefly investigated. 1000 staphylococci per c.cm. were found insufficient to show an appreciable lipolytic action, and for the purpose a heavy dose was taken. Any production of a tryptic or other enzyme has not been investigated in these experiments, though the addition of vaccine to serum or blood in my experiments has shown no increased antitryptic action; nor at this stage is it possible to do more than indicate some of the points noted or met with in the technique.

Hæmolysis.

The mixture of coenzyme and serum appears to be hæmolytic to red blood corpuscles tested in the usual way, whereas the vaccine mixture is not hæmolytic. It is well known (Wells [10]) that bacterial hæmolysis has been attributed variously to the proteolytic enzyme trypsin (Abbott and Gildersleeve [11]), to the alkalinity of filtrates (Jordan [12]), and to physical effects (Quinan [13]). The association of lipolysis and hæmolysis is also well known, hæmolytic effects having been described by pancreatic juice activated by lecithin, although it is not in this way rendered tryptic (Neuberg [14]). The absence of hæmolysis in my experiments on the addition of vaccine or of vaccine and serum mixture to red corpuscles (man) suggests that the induced tissue lipolysis is different to pancreatic lipolysis. The addition of coenzyme and of vaccine to blood is likewise followed by lipolysis, but the action is much less marked. The presence of a trace of blood in the serum or of hæmolysed blood exerts an antilipolytic effect. The addition of the living organism to serum shows lipolysis, but the action is much reduced. The addition of the living organism to blood produces hæmolysis and increased antitryptic action of the serum. It is important that the serum should be fresh and sterile. Longer periods than three hours of the preliminary incubation appear to lower the resulting lipolytic action.

Summary.

1. The addition of pancreatic coenzyme and of vaccine to serum or blood in vitro exerts a lipolytic action.

2. The serum so treated has bactericidal properties.

3. The resulting tissue lipolysis in the case of vaccine appears in certain details to be different to pancreatic lipolysis.

4. Preliminary experiments indicate that serum (autoserum) diluted and heated in which the coenzyme or coenzymes of the serum is present activates in a similar way the inactive prolipase of fresh serum.

5. In induced tissue lipolysis an explanation in part is afforded of natural and therapeutic immunisation.

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ROYAL INSTITUTION.—A general meeting of the members of the Royal Institution was held on Nov. 3rd, Sir James Crichton-Browne, treasurer and Vice-President, in the chair. The special thanks of the members were returned to Mr. Richard Pearce for his donation of £100 to the Fund for the Promotion of Experimental Research at Low Temperatures; to Mr. Robert Mond for his gift of laboratory material; and to Sir Humphry Davy Rolleston for his gift of a drawing of Sir Humphry Davy's birthplace, and a water colour of his statue in the Market Place, Penzance.

A FURTHER NOTE ON

PICRIC-BRASS PREPARATIONS IN THE TREATMENT OF LUPUS.

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IN my previous paper [1] on the use of basic salts of copper and zinc (brass) in the treatment of lupus and cutaneous tuberculosis generally attention was drawn to the difficulty of treating the deeper deposits and isolated nodules. To this should have been added the difficulty occasioned by the undermined edges of certain forms of lupus in which the progress of the disease at the edge does not reach the surface, but, travelling along intracutaneously, is covered by a considerable amount of healthy or pseudo-healthy tissue. It was stated "the problem is only one of contact; if contact can be obtained the result is always assured."

During the past few months my attention has been almost entirely devoted to the limitations of the brass treatment, which, in certain cases, materially interfered with the complete removal of the disease, and in all cases lengthened the time of treatment. The method of investigation has still been the empirical one of following along the track showing increasing results by actual application, and it is believed that a material advance has again been made towards removing those final deposits and in shortening the time of the treatment.

Mode of Action and Limitations of the Remedy.

It may be recalled that the action of the brass paste was found to be specific, producing rapid caseation of the tuberculous masses that were easy of access, while the brass oil ("bro") assisted matters by removing the subsidiary thickening of the surrounding tissues produced by the tuberculous irritation. In the case of the brass paste contact was found essential to produce a satisfactory result. Its action was a destructive one along the area of deterioration between the normal tissue unaffected by the treatment on the one hand, and, on the other, by the subnormal resistance of the invaded area, which was, by means of its application, caseated and destroyed. This action appeared to be due not so much to the direct action of the paste as to the release of a ferment in the diseased area, which by attacking the deteriorated tissue, hastened the destruction already started. Even a small amount of healthy tissue or slightly subnormal tissue appeared able to offer a considerable resistance, and was in some cases effective in interposing a barrier to the remedy, varying noticeably in strength in different individuals. The brass oil, on the other hand, apparently conveyed along the lymphatics a similar substance, and was thus able to act at a much greater distance; it effectively removed the various thickenings produced by tuberculous invasion, and was more slow of action. The action, in the case of bro, was principally confined to what may be called secondary deposits, primary conditions only being removed indirectly by the increased resistance and vascularity produced by the removal of the deleterious action of the swelling produced by the tuberculous deposits.

The problem presented was to find an agent with a still higher power of destruction than that of which the brass was capable, but still below the point at which the healthy tissue would be seriously injured. This preparation must be selective or specific to the variety of deterioration produced by the tuberculous invasion. In the nature of things, to achieve this, some slight injury to the healthy tissue might be reasonably expected, but it must be of limited amount to avoid any caustic action. Considerable instability of the preparation must be expected, as instability is the quality on which the hope of selective destruction largely depended.

Those who have used picric-brass preparations have generally recognised the immediate improvement, which is so rapid and satisfactory as to be almost dramatic. But this improvement gradually slows down as the contact nodules are removed, the remaining deposits being more or less protected by their healthy surroundings; consequently the

[1] THE LANCET, 1919, i., 415.

subjects for further investigation were afforded by those cases that, already treated by brass, had come more or less to a condition of stability.

Search for a More Potent Preparation.

For some time attempts were made to produce a greater destructive power by varying the proportions of the zinc and copper in the picric brass. It was found that when the balance was altered the paste could be made more destructive, but it had lost its selective character, and its penetration had also disappeared; the destruction of the tissue became uniform and the specific character of the action had been changed. The paste also caused more pain; in fact had become an ordinary caustic. As far as could be ascertained, the greatest effect compatible with its specific nature had been reached. This was all the more emphasised during a series of observations extending over a period of some four months, when the basic material that had been used suddenly went off the market, necessitating the investigation of some 20 other preparations, until another one of similar quality to the first was obtained. During this period the specific action of the brass was lost, the caustic action of the copper only remaining.

In the search after a more destructive specific a number of experiments were made with the nitro-phenyl series, with its nine standard combinations and its many unstandardised ones, to see if any of them would yield a more penetrative material. Once success seemed almost to have been achieved with a clear dinitro-phenyl combination, but, unfortunately, although very many attempts were made, the same combination was never obtained, so at last that series was abandoned. Then the sulpho-phenyl series was investigated, and ultimately the material sought for was found in a saturated solution of picric in sulphanilic acid. This is made by adding picric acid to sulphanilic acid and raising to a temperature of 100° C., a subsequent addition of 1 per cent. of carbolic acid being made. This preparation is of a brown colour, the golden colour of the lower preparation having been replaced, as it proved too caustic in its action. The preparation remains fluid at an ordinary temperature. The effect is always tested with regard to its action on the tuberculous tissue. The combination has been named sulphanilic-picric. The amount of picric acid taken up is about 2 per cent., and the liquid does not show the presence of free picric acid. It is not certain if there is any chemical union; if there is, it must be of a very weak character. But its power of selection of tuberculous tissue is immediately apparent on application, and its destructive force is deeper and more extended than is the case in the picric-brass preparations. In addition to its own power of attack it has the value of increasing the effectiveness of the picric-brass preparations, and it is possible, when the two are applied together, to reach the nodules in healthy tissue, so that the series is now complete. When applied to tuberculous tissue its rapid penetration is demonstrated by the deep yellow colour which the tissue acquires owing to the release of the picric acid. Healthy tissue is either not stained at all or much more slowly. If applied to healthy skin it has very little effect, producing a desiccation, not sufficient to produce desquamation. The sensory effect on healthy, fine skin is just that of heat and creates a desire to scratch. With the tuberculous tissue the condition is far different, the rapidity of the invasion depending on the amount of degeneration that has occurred. Where tuberculous tissue is exposed it is penetrated with a deep yellow in a couple of minutes. Where less degenerate, the tissue is more slowly invaded and is generally completely penetrated in five or ten minutes. It is well to use some local anæsthetic before it is applied, as its application is more or less painful, varying enormously with the character of the case; even the dry, smooth, elevated ridges accompanying the healing of verrucosa are penetrated and broken down when used in combination with the picric brass, although they are more or less impervious to the brass alone, yielding slowly to the steady application of bro.

Local and General Action of the Preparations.

Curiously enough, sulphanilic-picric used alone has the same disability which so long restrained the publication of the plain brass results before the picric addition had been discovered. It has a tendency to produce the lighting up of other and sometimes more important foci, and there is also the tendency to produce the gradual constitutional deterioration that was the great drawback of the plain brass. But when used in combination with the picric-brass paste, or with bro, this secondary series of effects is never produced. There is apparently something in the combination of the brass and picric that limits the deleterious power of the dissolved and absorbed material from tuberculous destruction. There is little doubt that this health deterioration is produced by the deleterious action on the tissue resistance of the absorption of the products of decomposition produced by the caseation of the tuberculosis material, which is naturally absorbed in larger quantities when the tuberculous tissue is further destroyed. The effect is somewhat similar to that produced when too large a dose of tuberculin is administered. But the thought-compelling factor in this case is that both ends of the series produce this result when applied alone, the combination not only producing an increased destructive deterioration, but at the same time controlling the factors which produce the health deterioration. It is this effect which emphasises the specific nature of the combination. The whole subject becomes of greater importance when the internal application of the brass treatment comes to be considered, for it is this constitutional control that offers a ray of hope, in that most complicated series of effects, which otherwise upsets the protective balance, giving rise to the large amount of failures in the treatment of tuberculous disease.

While the brass paste increases the specific action of the sulphanilic-picric locally, the bro rather controls that local action, but it prevents the injury from absorption that might otherwise occur by preventing any constitutional reaction. As far as it is possible to state anything of a preparation that has only been under observation for 12 months, it is believed that final effectiveness has been reached, but increased rapidity of action is still desired. The combination of sulphanilic-picric and the brass paste has proved itself capable of penetrating any tissue, however dense, and of producing complete local destruction without constitutional danger. In fact, the general impression obtained is that the whole resistance of the individual seems to be rather increased by the combined use of the two preparations, brass and the sulphanilic-picric applications, and this is surmised because other untreated parts seem to show an improved condition.

Method of Application.

The present method of application to an ordinary case of lupus is first to clean up the affected area by a few bro fomentations at two or three days' intervals, and when the area has been cleaned up in this way the selected piece of tissue where treatment is most desired is rendered anæsthetic by applying adrenalin and cocaine or other local anæsthetic.

After drying off the moisture the sulphanilic picric is applied with a glass rod, and a short interval is allowed while it penetrates the tuberculous tissue. If the surface is broken and not sufficiently anæsthetised, the pain may be considerable, but bearable. If the surface is unbroken the pain is usually slight. The time of waiting for the picric to penetrate is from five to ten minutes. The sulphanilic gradually stains the affected tissue yellow. The way in which it picks out the tuberculous invasion is quite interesting. If the area is reasonably small and the destruction of the tuberculous tissue the primary consideration the whole area is then dressed with brass paste under strapping, in the usual way, or, if a lesser action is desired, it may be smeared over with the picric brass and left exposed, in which case the action is not so vigorous. If the case is at all a bad one and extensive deposits exist it is better to apply a bro foment or even to only paint it over with the bro. These applications are applied twice or thrice weekly, as circumstances dictate, with occasional rests so as to be sure what progress has been made. There are thus four degrees of destruction available. The destruction produced by picric-brass paste under strapping, after the application of sulphanilic-picric, is very extensive and sometimes painful, but the destruction is limited to the tuberculous tissue, the neighbouring tissue only being engorged from the irritation produced; the destruction is quite considerable and removes the tissue most efficiently, rarely wanting the application more than three or four times, each time being less painful as the destruction and reaction become more limited by the removal of the tuberculous masses. In this connexion one of the valuable

side features of the treatment is one application usually removes any painful points; so much so that painful points are now selected for the first application. As a rule, sulphanilic-picric is not applied to more than a couple of inches of growing edge at one time unless one is dealing with an insensitive case, when as much as a couple of square inches have been treated at once. Curiously enough, it is not at first painful when applied to the mucous membrane inside the nose, where it seems extremely efficient in removing lupus invasion. It is applied in the same way and painted afterwards with bro on a camel's-hair brush, and it has also proved effective in the buccal invasion of lupus erythematosus, as well as on the face. The application to the deeper sinuses of the neck, when not strictly intradermic, must be done with some caution on account of the very efficiency of the treatment, and the depth of application must be gradually increased, as it is necessary to control the reaction by the bro dressing; owing to absorption along the lymphatics, foci of considerable depth may be reached, and their solution be followed by a considerable reaction. It is always well to prepare the deeper cases with bro fomentation so that as much of the subsidiary deposits and swelling as possible may be first removed, and even then the attack of the deeper masses must be gradual, as I obtained one or two quite considerable reactions before I learnt caution. The rapidity and effectiveness with which these deep neck thickenings disappear is one of the most satisfactory results of the sulphanilic-picric. One of the most complete demonstrations of the innocuousness of sulphanilic-picric except to tuberculous tissue, is demonstrated when applied to the mucous membrane of the eyelid, which has been done, using a local anæsthetic, and it produced no more than a temporary congestive disturbance of the eye, while it removed entirely the lupus invasion of the lid itself.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF

TRYPANOSOMA RHODESIENSE INFECTION WHICH RECOVERED.

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CASES of trypanosomiasis in man in which recovery has taken place have been recorded from time to time, and of the many patients treated for this disease during the last 15 years at the Albert Dock Hospital attached to the London School of Tropical Medicine a fair number have been cured. In all these cases, however, the infecting agent has been *T. gambiense*, whether contracted in Central Africa, West Africa, or on the Congo, and hitherto, as far as we are aware, no case of cure has been noted in individuals who have been unfortunate enough to become infected with *T. rhodesiense*. The publication, therefore, of a few details of the following case may not be without interest:—

Account of Case.

The patient, E. H., a young man of 20, was an elephant hunter by profession. He had lived in Great Britain all his life until September, 1913. He then went to Nyasaland, tobacco planting. He stayed there for six months. During that time he enjoyed good health; he did not go into the "bush" or come into contact with tsetse-fly. From Nyasaland he went, in March, 1914, to Fort Jamieson. During his journey (350 miles) to Northern Rhodesia he was bitten about 20 times in three days by tsetse-flies whilst passing through the "fly belts." He stayed at or near Fort Jamieson until December, 1914, during which period he was bitten frequently, but was not alarmed, as he was unaware that sleeping sickness existed there. Whilst in the region of Fort Jamieson he had several attacks of malarial fever and also suffered from "tick fever," with symptoms of diarrhœa and fever in December, 1914, but recovered completely. In December, 1914, he moved to the frontier of German East Africa, where he remained till April, 1915. During this time he was on patrols and consequently in fly-infested areas. He started back from the frontier to Fort Jamieson in April, 1915, and in September, 1915, shortly after returning to Fort Jamieson, a journey of about 500 miles, he began to get attacks of what he thought was malaria. Knowing that he had been recently in a sleeping sickness area he went into hospital, where his blood was examined and malarial parasites found. Quinine did not stop his "fever" and a gland in his neck was punctured and trypanosomes found. His attacks took the form of fever each night with great weakness, constant headache and constipation, but no vomiting. He did not notice any rash at the time. He complained also of "specks" floating in the eyes and of blurring of vision, but of no other eye symptoms. He had atoxyl (3½ gr. every third day) whilst in hospital in Rhodesia and continued this for a period of six weeks—i.e., until he landed in England. The temperature tended to settle down, but he still had "fever" about every five days. He arrived in England about the beginning of November, 1915, when he was admitted to the Albert Dock Hospital under Dr. Daniels.

Condition on Admission.

On admission he was a tall thin young man, weight 9 st. 4 lb., of sallow complexion and complaining of weakness and fever. On examination the heart was not enlarged, apex beat in normal position and with a faint systolic murmur over the mitral area. Pulse averaged 90-100 and rose easily on slight exertion. Liver not enlarged; spleen moderately enlarged, not tender. Urine normal; no rash seen; no enlarged cervical glands. No Kerandel's symptom, orchitis, periostitis, or œdema of the eyelids or face was to be found and nothing abnormal was detected on ophthalmoscopic examination. Examination of the blood showed trypanosomes in fair numbers, no malarial parasites: Red cells, 4,600,000 per c.mm.; white cells, 3750 per c.mm.; hæmoglobin, 75 per cent. Differential count: Polymorphonuclears, 49 per cent.; large mononuclears, 10 per cent.; lymphocytes, 30 per cent.; eosinophiles, 11 per cent.

Injections were made of his blood into white rats and infection of these animals readily obtained in the first passage, parasites being demonstrated on the twenty-first day after inoculation, whilst the period of incubation on subsequent passages from rat to rat was on an average five to seven days. The so-called posterior nuclear forms were readily found in the inoculated animals and the animals died, as a result of the infection, in 16 to 18 days on the average from the time of inoculation. The temperature chart during the first five months of the patient's stay in hospital was of a markedly irregular type with exacerbations of the fever every two or three days. Thereafter the temperature ran an almost normal course except for short sharp rises as a result of injections of antimony tartrate. Parasites were found in the blood from time to time up to April 6th, 1916, after which date, although repeated examinations were made, no further trypanosomes were ever detected.

Treatment.

Treatment at first consisted of the administration intramuscularly of atoxyl gr. 3½ thrice weekly, together with antiluetin gr. ½ in solution once daily by the mouth. On Dec. 8th, 1915, injections of antimony oxide (Martindale) subcutaneously were begun, starting at first with a dose of 30 minims per diem and increasing this gradually until as much as 130 minims were given in 24 hours. At the same time the administration of atoxyl and antiluetin was continued, although it was found necessary from time to time to drop the use of the latter drug for a week or so owing to the severe nausea it was liable to produce if taken for too long at a time. In March, 1916, the characteristic circinate rash was first noticed; it was more or less all over the body. The feet and hands swelled and there was marked tonsillitis. The rash lasted about a week and then disappeared gradually, the tonsillitis subsiding at the same time. This combined course of treatment was persevered in until March, 1916, when, as trypanosomes still appeared in the blood from time to time, it was decided to drop the administration of the antimony oxide and to try the effects of repeated intravenous injections of tartar emetic. These were accordingly started, giving a dose of 2½ gr. twice a week. The administration of atoxyl was also discontinued at the same time, though he continued to take the antiluetin. These injections of tartar emetic were repeated twice weekly until April, 1918. At first the injections caused a short sharp rise of temperature, sometimes accompanied by a definite rigor, but later there was frequently no response to the administration of the drug beyond some cough coming on towards the end of the injection. No pain in the abdomen or diarrhœa was ever caused by the drug. As already stated, it was on April 6th, 1916, that the last trypanosome was seen, but in view of the difficulty of deciding when a cure had been effected in

trypanosomiasis it was decided to continue the injections of tartar emetic over a prolonged period, and such was done until two years had elapsed from the last appearance of the causative parasite. All treatment was stopped in April, 1918, and since that time the patient has been working on a farm in England. He is able to do a good day's work, and has regained his normal weight of 11 st. and feels quite fit.

Remarks.

The case is chiefly remarkable from being the first on record in which one may feel fairly confident that a definite cure has resulted in a true case of Rhodesian trypanosomiasis, and for the really enormous amount of tartar emetic it was found possible to administer. In all the patient had considerably over 500 grains of the drug, and no untoward effects of such administration have manifested themselves.

A CASE OF

CHLOROMA SIMULATING MASTOID DISEASE.

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CHLOROMA has been known and described for something over 50 years, and has been variously regarded as a carcinoma (the so-called "green cancer"), a sarcoma and a variety of lymphatic leukæmia. In looking up the literature I have found records of some 65 cases of this malady, but as the following appears to have some points of interest I venture to add it to the number.

The Case Described.

J. M., male, aged 10, was admitted to hospital on June 14th, 1919, complaining of pain and discharge from the right ear. His temperature was 99·6° F. and pulse 104, and on examination he was found to have a tender swelling behind the right ear over the mastoid process, enlargement of the upper cervical glands on that side, and right facial paralysis of the complete type. A diagnosis of tuberculous mastoiditis was made, and the mastoid antrum was opened, revealing the presence of a small amount of pus and a quantity of greenish-looking granulation tissue. The patient's condition improved steadily for about a week, and he then began to suffer from retention of urine and marked constipation; there was no vomiting or headache, and the optic discs were normal. From this time onwards the temperature fluctuated, rising to 100° or 101° every evening, with corresponding increase of pulse-rate, which varied from 90 to 116. Examination of the cerebro-spinal fluid showed it to be normal as to pressure, content, and sterility; the Wassermann reaction was negative in cerebro-spinal fluid and blood.

The first blood count, done on June 23rd, revealed an apparent condition of lymphatic leukæmia; the figures were: R.B.C. 2,091,000, W.B.C. 19,800, Hb 40 per cent., polymorphonuclears 7·5 per cent., lymphocytes 91 per cent., eosinophiles 1 per cent., basophiles 0·5 per cent. On June 30th the patient had severe epistaxis and complained of pain across the back at about the level of the eighth dorsal spine, and on July 16th he developed a left-sided facial paralysis. By this time the facial paralysis on the right side had greatly improved, and it had recovered completely before his death on August 4th. There was at no time any affection of the other cranial nerves. On July 21st a very slight bilateral enlargement of the inguinal glands was noted, and also a movable nodule the size of a pea about 1 inch to the left of the sternum in the third intercostal space. The liver was slightly enlarged. The blood count showed a steady increase in the number of leucocytes, and the last one taken before his death gave the following numbers: R.B.C. 945,000, W.B.C. 37,200. Hb 23 per cent., polymorphonuclears 2 per cent., lymphocytes 90 per cent., large mononuclears 6 per cent., myelocytes 2 per cent. The lymphocytes were all of the large variety and a very few normoblasts were seen; there was slight polychromasia and variation in shape and size of the red cells. The urine was normal throughout. The patient became gradually weaker and the pulse and temperature higher, fluctuating respectively between 130 and 150 and 100° and 104°. Death occurred on August 4th, seven weeks after the apparent onset of the disease.

Post-mortem Appearances.

Unfortunately, permission for a complete autopsy could not be obtained, so that practically no examination of the head was possible. The mastoid wound was reopened and somewhat enlarged, and it was found that the bone was rather soft and looked greenish-yellow on the cut surface; the antrum was filled with a soft greenish substance which was removed for examination. Spinal column and cord: There were numerous flattened greenish-yellow masses on either side and in front of the bodies of the vertebræ in the thorax and abdomen, and the largest, which measured 6 in. by 3 in., was invading the right psoas muscle. These masses were all closely incorporated with the periosteum, but did not invade the bone; the periosteum could be stripped cleanly off the bone, bringing the tumour with it. A similar substance was found in the posterior part of the vertebral canal in the mid-dorsal region and was pressing on the spinal cord. Skeletal system: A nodule of greenish-yellow tissue the size of a florin was situated immediately to the left of the sternum between the second and third costal cartilages towards the anterior surface. On the posterior surface this mass extended from the first to the fourth costal cartilage. Numerous greenish masses were incorporated with the periosteum on the inner surface of the ribs. In the upper end of the right femur the periosteum and bone appeared normal; the marrow was slightly greenish-yellow in colour. Lungs: There were small masses of lymphoid tissue on the surface of both lungs and numerous petechial hæmorrhages on the external and cut surfaces. Large lymphatic glands were found at the roots of both lungs; these showed no greenish-yellow colouration. Pericardium: Many petechial hæmorrhages. One or two greenish nodules the size of a pea on the cardiac surface. Heart: Many petechial hæmorrhages. Blood-vessels normal. Thymus normal. Stomach: Mucosa showed several irregular raised greenish-yellow patches, firm and hard to the touch; some small submucous hæmorrhages. Duodenum: A few large greenish-yellow masses on the mucous surface, chiefly in the first part. The remainder of the small intestine was normal. Large intestine: Numerous similar nodules the size of a pin's head. Liver: Surface slightly nutmeg with some fatty change. Spleen: Surface mottled; pulp a dirty yellowish-brown. Pancreas: Invaded by a few small greenish-yellow nodules. Kidneys: Left—The whole surface was studded with greenish-yellow masses from a pin's head to a farthing in size; these masses were firm and hard to the touch and scattered throughout the whole kidney. The intervening tissue was mottled dark red with hæmorrhages. The capsule stripped easily. Right—Condition similar but less marked. Suprarenal capsules appeared normal. Lymphatic glands somewhat enlarged in neck, axillæ, and groins; the latter only could be examined and showed no greenish colouration. The mesenteric glands were enlarged, discrete, and purplish-red. Mouth and tongue appeared normal on external examination. Larynx, trachea, and thyroid gland could not be examined.

Microscopic appearances.—The bone marrow from the femur showed great hyperplasia of all the normal marrow cells, no particular type of cell predominating. In the kidney a section through one of the nodules showed many cells resembling plasma cells together with small round cells and a few with multiple nuclei. The (?) plasma cells contained an excentric nucleus approximately the size of a lymphocyte, and their protoplasm stained a faint mauve in an eosin-hæmalum preparation. There were numerous thin-walled vessels and the whole appearance was strikingly reminiscent of granulation tissue. In other regions of the kidney the tubules were separated by collections of similar cells. In the pancreas there was a similar infiltration, with pushing apart of the acini. The spleen and lymph glands appeared normal. In the stomach the mucous membrane showed evidence of post-mortem necrosis, and contained a few small collections of cells as above. In the liver the cells forming the greater part of the centre of each lobule were necrosed, and the intralobular veins were widely dilated. There were no lymphoid masses, such as occur in lymphatic leukæmia, and no infiltration resembling that in the other organs. The tissue from the mastoid antrum was composed of the same type of cells as above, as were also the nodules growing from the periosteum of the several bones; in the parts where muscle had been invaded the fibres were degenerate.

Remarks.

In nearly all the cases reported examination of the tumours and of the bone-marrow has shown them to be composed almost entirely of lymphocytes, mainly of the large variety. McCallum, in his "Text-book of Pathology," describes a type which he calls "myeloid chloroma," in which cells resembling plasma cells predominate and masses of myelocytes appear in the bone-marrow. In the present case it will be noted that there was a hyperplasia of *all* the elements of the bone-marrow, together with a variety of type in the cells composing the tumours. Further, in none of the reported cases have I been able to find an onset resembling mastoiditis, although, considering the frequency with which head symptoms are the first indication of the disease, this would not seem to be an unlikely occurrence.

I am indebted to Mr. J. Gay French and to Dr. J. W. Carr for permission to publish this case.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF MEDICINE.

ANÆMIAS OF THE HÆMOLYTIC JAUNDICE GROUP.

A MEETING of this section was held on Oct. 28th, Dr. A. F. VOELCKER, the President, being in the chair.

Dr. GORDON WARD read a paper on Anæmias of the Hæmolytic Jaundice Group. He said that there was a group of anæmias or of morbid states without anæmia which were characterised by (*a*) a tendency to familial, hereditary, and congenital incidence; (*b*) an occurrence also in the form of sporadic, sometimes frankly infective cases; (*c*) an intermittent or paroxysmal course; (*d*) changes in the red cells, peculiar in most cases to these diseases; (*e*) prior changes in the plasma on which the changes in the red cells depended; and which (*f*) are of a nature to render the red cells more prone to destruction either by the normal mechanism of portal hæmolysis or by phagocytosis, or by both. This group comprised five diseases:—1. Hæmolytic jaundice or cholæmia, which included all cases, whether congenital or acquired, idiopathic or symptomatic. In these there was a predominance of portal hæmolysis, and the red cells were peculiar in their susceptibility to saline hæmolysis. 2. Dresbach's syndrome, of which only three examples were on record. It was accompanied by good health, but the red cells were elliptical in shape and very variable in size. There was no anæmia. 3. Herrick's anæmia, of which four cases were recorded. In all of these there were sickle-shaped red cells, but in one case these peculiar cells only developed after culture; the patient's daughter had, however, the typical syndrome. There was severe anæmia, probably fatal in some cases, and although this was chiefly due to portal hæmolysis phagocytic cells had been found in the peripheral blood. 4. Malin's syndrome. Three cases were known. Splenomegaly was accompanied by severe, progressive, fatal anæmia, the circulating blood containing a great excess of white cells and large numbers of phagocytes. The latter appeared to be partly endothelial in origin and contained both red and white cells. An abnormality of the red cells and a primary defect in the plasma were presumed from various theoretical and experimental considerations. 5. Clough and Richter's syndrome, in which there was familial auto-agglutination of red cells. Very few cases were recorded, and the condition did not appear to be associated with anæmia.

Splenectomy was undoubtedly beneficial for some diseases of this group, and by considering them together this operation could be placed on a rational basis. Within recent years it had been proved possible to control disorders of the plasma to a considerable extent, usually by injection of various protein bodies. It was therefore of importance to realise the plasma defects underlying diseases which were not amenable to other forms of treatment, even if the knowledge could not yet have practical application.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

EXHIBITION OF CLINICAL CASES.

A MEETING of this section was held on Oct. 24th, Mr. J. P. LOCKHART-MUMMERY, the President, being in the chair, when many interesting cases were shown. Among other cases were the following:—

Lipodystrophia.

Dr. F. S. LANGMEAD showed a case of Lipodystrophia. The patient was a girl, aged 7 years, who was quite well and normal in development until Christmas, 1917, about which time wasting was first observed; it was not noticed to be localised. About two months later, after an attack of measles, the wasting became more obvious and progressed more rapidly. After the measles the child had an attack of acute rheumatism, for which she was confined to bed for six weeks. Later, with convalescence, the wasting was remarkable, and led to her admission to hospital. Dietetic treatment was followed by no improvement in her gaunt and emaciated appearance, and repeated examinations failed to reveal any cause. A stay in the country was attended with no better results. Examination showed that the wasting was confined to the upper part of the body and ended about the level of the umbilicus. The face and neck were markedly affected, all the fat seeming to have disappeared. Her face was consequently gaunt, with prominent bones and hollow cheeks and eyes, reminiscent of a "famine picture." The arms were wasted, but to a less extent, and the thorax and abdomen showed the same condition progressively less in a downward direction. The lower limbs were normal, straight, and slim, and, though not wasted, had no appearance of pseudo-hypertrophy, as was sometimes seen. The disappearance of fat was accompanied by no loss of power or other symptom, the child being in good general health. The only disability was a cosmetic one, which caused much anxious inquiry after tuberculosis or cancer by well-meaning friends, relations, and strangers.

Dr. F. P. WEBER and Dr. T. H. GUNEWARDENE communicated a report of the autopsy of a case of Lipodystrophia previously shown before the Section. The cause of death had been sepsis, and post mortem no changes had been found other than those of the cause of death. The ductless glands were normal. The absence of fat in the lipodystrophic area was more complete than is found in any variety of wasting disease. The disappearance of fat was limited to superficial structures, and had not occurred within the thorax or abdomen or about the viscera.

Familial Osteo-arthritis.

Dr. R. A. ARMSTRONG showed two cases of Chronic Joint Disease in the same family from Dr. H. Thursfield's out-patients' department at St. Bartholomew's Hospital, the condition being regarded as an osteo-arthritis. The boy, aged 12 years, was brought to hospital complaining of pain in the left knee-joint. He had had occasional attacks of indefinite pains in the joints since the age of 4, which were localised in the left knee at the age of 7. He had never complained of his hands, although his mother noted that his finger-joints were swelling as early as the age of 4. A year ago he had had general rheumatic pains affecting most of his body; he was not feverish at the time, but had a slight swelling of the left knee- and ankle-joints, which were tender to the touch. Nothing could be found on palpation, nor was there any limitation or undue freedom of movement in the left knee and ankle; the other major joints were normal. There was very marked enlargement of the finger-joints—the more pronounced for the relative slenderness of the phalanges themselves, due to wasting of the soft parts—and this condition was especially marked in the distal interphalangeal joints, particularly of the second and third fingers. There were well-marked knobs or bosses on the sides of the distal joints, which might fairly be likened to the Heberden's nodes characteristic of the type of osteo-arthritis of the smaller joints which occurred in adults. Skiagrams showed at present only atrophy of the ends of the shafts and epiphyses. The terminal phalanx of the little finger of each hand had undergone actual pathological dislocation towards the radial side. There was no grating and no evidence of erosion of cartilage could be obtained, but the movements of the fingers were somewhat limited and the boy was unable to make a satisfactory fist. A similar but less advanced condition existed in the toes, and his habit of everting his left foot when walking expressed an unconscious attempt to lessen the stress of walking on the toes of that foot, of which he complained more than of the right. In all joints the pathological condition was articular with wasting of surrounding tissues and tendons, rather than periarticular. In appearance the boy was rather pale and small, and he was below the average physical development for his age. No focus of infection had been found in the naso-pharynx or teeth. There was no enlargement of lymphatic glands and the spleen was not palpable. His sister, aged 11 years, showed a similar but less advanced condition of the finger-joints, the bony changes being relatively slight. The condition was slowly progressive, but she was to all appearance otherwise a healthy child. The mother had a typical osteo-arthritis of the smaller joints, which was becoming slowly worse. The two other children of the family—both girls—were free from the condition and both healthy. One child of a maternal

aunt, a girl aged 20 years, developed a similar affection of the joints in childhood, and now had crippled fingers, and the maternal grandfather and great grandfather were also affected. Dr. Thursfield had devoted considerable time to a search through current literature and failed to find any reference to a condition similar to that described. It would seem that the cases afforded strong evidence in favour of the view that osteo-arthritis might truly be described as a disease of degeneration rather than due to an infective agent or to toxic absorption.

Köhler's Disease.

Mr. MAYNARD HEATH showed a case of Isolated Disease of the Tarsal Scaphoid (Köhler's disease). The patient was a boy, aged 7 years, who had knocked his left foot six months previously. He walked badly after the accident, and the foot became swollen a little, but gradually recovered. After about three months the swelling of the foot began again without pain or redness. When first seen the swelling had decreased, but was still present. It was diffuse over the inner border of the foot and most marked over the scaphoid. There was no redness or local tenderness, and no other bony lesions. The boy walked with the foot abducted. There was no paralysis, but the calf was a little wasted. The foot was put in plaster-of-Paris in corrected position, and he was allowed to walk on it. Recovery ensued in three months. There was a strong history of tuberculosis on the father's side, and the boy looked delicate; he had suffered from "bronchial trouble" since the cold weather, his mother had said, and when his chest was bad his foot swelled again slightly. X rays showed that the diseased scaphoid was smaller than normal, its outline was irregular, the architecture was impossible to recognise owing to the cortex and spongy portion running together, and its density was greatly increased. These changes agreed with the description originally given by Köhler, except that in his cases the outline of the bone was regular. Recent X rays, taken after an interval of six months, showed that the bone had returned to normal size, its density was very much decreased, but it was apparently divided into two parts by a cleft. The boy had now no symptoms.

Leukæmia.

Dr. GUNEWARDENE showed a case of Leukæmia with Scalp Nodules. The boy, aged 3 years and 4 months when first seen, suffered from an unexplained anæmia with a hæmoglobin percentage of 11, and 760,000 red blood cells per c.mm. He responded to treatment in five weeks, as evidenced by his general condition and blood examination. He then contracted measles, and about three months later developed nodules mainly on the scalp. The blood picture at this time showed a hæmoglobin percentage of 72, 5,500,000 red blood cells and myeloblasts. At this stage there were 69,000 white blood cells and 88 per cent. myeloblasts. Without treatment some of the nodules disappeared and others became smaller, but the hæmoglobin and red blood cells diminished. After treatment by injections of soamin and iron citrate the temperature rose, and a soft tender tumour developed, apart from the site of injection, but the general condition and blood condition seemed to be improving. The spleen was never palpable or enlarged to percussion, but the liver and superficial lymphatic glands were enlarged. The case was regarded as one of myeloid leukæmia.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A clinical meeting will be held to-day, Friday, Nov. 7th, in the society's rooms, West London Hospital. Cases will be shown at 8 P.M.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—At a meeting of this society held on Oct. 31st Dr. L. A. Rowden presented a paper dealing with the Principles of the Treatment of Hyperthyroidism by Radiations. The technique of treatment was explained and indications given as to the most suitable type of case for which radiations had proved their utility. An interesting discussion followed.—Amongst the cases and specimens shown at the meeting were the following:—Dr. R. A. Veale: A case of Oriental Sore.—Mr. W. Thompson: A case of Carcinoma of the Breast. The other breast had been removed for carcinoma 16 years before.—Mr. J. F. Dobson: Skiagram from a case of Ureteral Calculus removed by transvesical uretero-lithotomy.

Reviews and Notices of Books.

Naval Hygiene. By JAMES CHAMBERS PRYOR, A.M., M.D., Medical Inspector, United States Navy, Head of the Department of Hygiene, U.S. Naval Medical School. London: Wm. Heinemann. 1919. Pp. 508. 12*s.* 6*d.*

THERE is need in this country for an authoritative work on naval hygiene, if for no other reason than to lay down a standard of sanitary conditions on board ship which could be accepted by the Navy and the Merchant Marine. But just as the Navy 30 years ago allowed naval history to be rewritten by an American admiral, though the Reader of Modern History at Oxford happened at that time to be a retired captain in the Navy, so now it leaves the writing of books on naval hygiene in the hands, capable enough, first, of Gatewood, and now of Medical Inspector Pryor, of the United States Navy. We think the appearance of this book somewhat of a reproach to our initiative as a nation considerably interested in the health of those who go down into the sea in ships.

Dr. Pryor's book is smaller than Gatewood's, and is bright, gossipy, and interesting. It is also easy to handle. There is little account of methods of ventilation, or of the drift of air currents aboard ship, but it provides a good account of Fleet Surgeon R. C. Munday's investigations. U.S. ships give their men 150 to 200 cubic feet of air space, and fresh air warmed to 70° F. is supplied by thermo-tanks. As to filtration of water, the writer tells very humorously the story of a black railway-car porter who assured him that the water in his car was all right, saying, "It is filtheyed every day," and as the writer says, "No doubt it was." The U.S. naval ration is not detailed, but it works out at 4384 calories. No table of calorie values of foods is given—a pity when any naval surgeon may in emergency have to advise on a daily ration—and there is no statement of the food value of condensed milk. The wide variety of topics is indicated by the following samples. Oysters, we are told, should never be eaten raw, and smoking should not be permitted in the cells, or, as they are termed "brigs." It is recommended that the latrine troughs shall be daily disinfected with a steam hose. This is the first book on naval hygiene to have chapters on aviation and submarines. The U.S. Navy dived about a lost submarine at 51 fathoms, air being supplied compressed from flasks the divers took down with them, but the time they remained down safely is not stated. Carriers of typhoid are apparently allowed to serve on board, for it is noted that they should not be allowed in the galley or laundry.

"It is said," which so frequently appears in American newspapers, occurs too often in this book, thus disclaiming for the writer any responsibility for the statements that follow. Thus when the sterilisation of water is being discussed, we find that "chloramine-T is said to be a more powerful disinfectant than sodium hypochlorite"; should not the author, with the hygiene laboratory of the Navy behind him, have decided that question for the benefit of his readers if he was to load their minds with chloramine-T as well as with sodium hypochlorite? The book is insufficiently dogmatic, too many statements and alternatives are given without clear selection of the most important, and the reasons for a decision are not always clearly stated. There is, perhaps, too little history given us here to guide us among the alternatives. A naval surgeon can have but a small library. If in his book of naval hygiene the old problems and their solutions are recounted, the surgeon learns how to meet and deal with the new troubles he finds. Thus we are sorry that there is no story of how beri-beri was extinguished in the Japanese, or Mediterranean fever in the British Navy.

The original papers of the author are the chief interest in the book. He has always found that firemen who suffer from heat cramp have a transient but considerable albuminuria. There is a wonderful picture of a shark bite. The victim had nearly the entire abdominal cavity torn away. Many of the pictures are most excellent and instructive, but the coloured plates of joints of beef contributed by Messrs. Armour would be more useful in a work on cookery. The hygienist, when concerned with meat, focuses his attention on bad meat: it is rather pictures of diseased

pleura, diseased glands, and parasites that he wants. For the index we have nothing but praise, and the second edition, which will speedily be required, will give the author occasion to make his book a little more stimulating, and so a better foundation for the improvements his pupils will, in their time, bring to the author's very important science.

Diseases of the Ear. By EDWARD BRADFORD DENCH, Ph.D., &c. London: Appleton and Co. 1919. Pp. 740. 30*s*.

THIS is a fifth edition of Professor Dench's well-known text-book. In his preface the author frankly admits that no complete revision has been possible. "One plate has been added, but apart from this the body of the work remains essentially the same." The chapter on labyrinthine syphilis has been modernised and an entirely new chapter on the functional testing of the static labyrinth has been added in deference to modern work. We are disappointed in the final result: the book might so easily have been improved, both by omission and by inclusion. As is usual with American books, the plates are good, but the book is burdened with a multitude of superfluous ones. A book of this size appeals mainly to the expert, and might be freed from the incubus of the time-honoured old cuts of varieties of aural specula and head-mirrors. On the other hand, the anatomical plates are excellent and of real value, and might well have been increased in number by the inclusion of something more directly in touch with actuality than the old Retzius diagrams to illustrate the microscopic structures of the cochlea. One feels a gap, too, in finding 20 pages devoted to furuncle of the external meatus without mention of the *Staphylococcus aureus*. It is disappointing to find the old teaching in which ossiculectomy is described at a length, which must imply the author's advocacy of it, and it is a genuine shock to have "stapedectomy" advocated at this day for the improvement of hearing "in selected cases" of all classes, non-suppurative, post-suppurative, and during active suppuration. The indexing is defective. We were for some time unable to find any but a trivial mention of otosclerosis by this means, but finally ran it to earth under the heading "Chronic catarrhal otitis media," a dubious neighbourhood, where otosclerosis is itself described as "rarefying osteitis of the labyrinthine capsule," a description unsupported by any evidence in the text. Under the heading of "Functional examination of the cochlea" there are illustrated a variety of more or less obsolete whistles, but there is, again by the index, no mention of the monochord. It was surely a mistake to issue a new edition without a more thorough revision of the text.

Chest Radiography at a Casualty Clearing Station. By R. LINDSAY REA, B.Sc., M.B. Belf., late Supervising X Ray Officer, 4th Army. London: H. K. Lewis. 1919. Pp. viii., 24, and atlas. 15*s*.

THOUGH happily the occasion for putting into practice the methods here described no longer obtains, this volume deserves notice inasmuch as it is a record of good work carried out in the face of many difficulties and under what were at times very unfavourable circumstances. The conditions of working called for no little ingenuity and the author is to be congratulated on the excellent results attained in the cases under his care. Though the work is of a strictly military character, it is not without its lessons in civil practice. The book is profusely illustrated, the chest radiograms being of a high standard—all the more remarkable when we remember the trying conditions under which they were produced.

JOURNALS.

Tubercle: a Monthly Journal Devoted to all Aspects of Tuberculosis. Vol. I., No. 1. October, 1919. London: Bale's Medical Books and Journals. 25*s*. per annum.—There have, we believe, been only three journals published in this country exclusively devoted to the discussion of tuberculosis problems. The first was a quarterly, and appeared for a few of the early years of this century as one of the praiseworthy efforts of the National Association for the Prevention of Tuberculosis. The second has had a longer career, being the *British Journal of Tuberculosis*, which is still doing excellent work, appealing alike to the interested public and to the profession. No reader of current general medical journals can have failed to observe the enormously increased space given to tubercle in recent years, and there is no doubt that ample material is forthcoming for a monthly periodical which shall gather up the best that is being said and done in the world of tuberculosis. We therefore welcome the first number of *Tubercle*, and may say at once that it will prove quite indispensable to any medical worker who wishes to keep abreast of the times, while lay workers will also find much of value to them. The place of honour among the original articles is given to one on endopleural operations, by Dr. W. Holmboe. It is well known that the success of artificial pneumothorax is often limited by adhesions tying the lung to the chest wall precisely where collapse is required, and Jacobaeus's operation, described in 1913, consists in cutting these adhesions with an electro-cautery guided by an electric thoracoscope introduced through the chest wall. Dr. Holmboe gives an account of the technical procedure in this difficult manœuvre, and records nine cases of his own. His practice is to examine with the thoracoscope every case of artificial pneumothorax, and, of 27 cases thus examined, 9 were regarded as suitable for operation. Of these selected cases 5 were notably benefited. It is worth observing that the actual inspection of the pleural cavity by means of the thoracoscope does not always confirm the radiographic picture—a fact which should be noted by some who place too much reliance on what are, after all, only shadows.

Other articles are that by Dr. John Guy on the Classification of Pulmonary Tuberculosis, and that by Sir StClair Thomson on a "Case of Innocent Tuberculosis." These are followed by book reviews and a series of useful abstracts, among which special mention may be made of those on the treatment of hæmoptysis and those on recent research in the United States. Professor Bang's article, "Is the Treatment of Hæmoptysis by Immobilisation Rational?" and Dr. Bergmann's, also on hæmoptysis, are so fully abstracted as to give a good account of this difficult subject. A critical article on the incidence of tuberculosis during the war points out that the rise in the death-rate of tuberculosis has been to some extent apparent rather than real, owing to the statistical error caused by withdrawing a large proportion of healthy males from the civil population. That the rise is not wholly apparent is shown by the fact that it affects females and well as males, and the withdrawal of healthy females from the civil population was too small to affect the figures materially. Other editorials deal with the status of tuberculosis officers, and with open-air schools. A Parliamentary report and reports of the doings of local authorities, societies, hospitals and sanatoriums, with news and notices of appointments, bring a very informing first number to a close. We wish our new contemporary every success.

The American Journal of Syphilis.—The current number contains an article on Intraspinal Therapy in Neurosyphilis, by Dr. John A. Fordyce, professor of dermatology and syphilology in Columbia University, New York, the study of which we commend to all our readers, whether engaged in special work or not. The general practitioner will find his outlook as regards neurosyphilitic lesions both illuminated and widened by a perusal of Dr. Fordyce's work, which will tend to augment his sense of responsibility towards his patient and to deepen his scientific conception of disease. Two principles are enunciated by the author. He contends, in the first place, that if a systematic serological examination were made in every case of early syphilis, abnormal conditions would be frequently recognised before any grosser somatic indication of the destructive work of the spirochæte in relation to neural tissues. By prompt intraspinal therapy a serious lesion in later life might then be prevented. In the second place, the author is convinced that even in advanced cases where gross neural lesions are clearly manifested there is reason to believe that judicious intraspinal therapy, combined with the more ordinary method of treatment, may still produce useful results. And he is speaking of such conditions as paresis, tabes dorsalis, and optic atrophy. We hope that the author will supplement his present article in the near future.

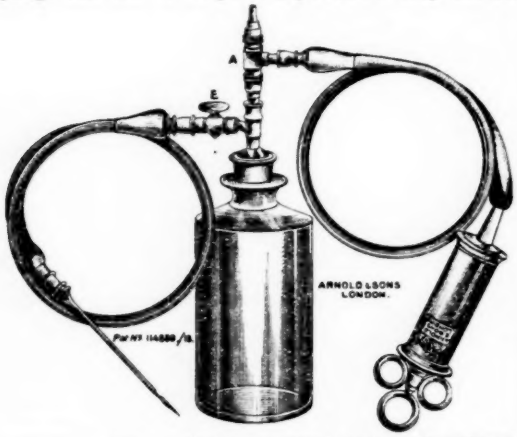
Medical Quarterly. Vol. I., No. 3, July, 1919. Department of Soldiers' Civil Re-establishment, Canada.—This number adequately carries out the purpose for which the journal was established—to publish contributions relating to the medical and surgical aspects of the problem of the discharged soldier. Dr. Le Mesurier contributes a useful article on Orthopædic and Prosthetic Appliances in the Late Treatment of War Disabilities. Figures illustrating modifications of the heel of the boot for painful flat-foot and Whitman's plates are included; also a figure of the metatarsal bar for use when there is pain on pressure on the sole over the heads of one or more metatarsal bones. The issue of the complicated metal arm with controlled elbow-joint, pronation and supination, and controlled finger movement has been discontinued, as most of the men supplied would not wear it. The Dorrance and the Bowler hook have been found to be very satisfactory. Dr. Le Mesurier considers

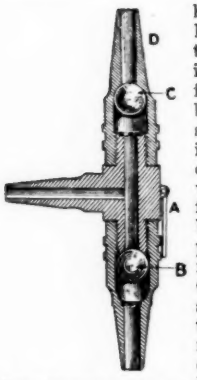
that a patient should be taught from the first to do practically everything with his remaining hand, and should expect to use his artificial arm only as an occasional and very secondary assistant to his sound limb. That tuberculous patients should return to their former occupation and not change to outdoor work with worse pay and longer hours is the main theme of Dr. Stewart's article on Work for the Tuberculous. The University of Toronto are providing a course of training extending over two months for social service workers who follow up discharged soldiers in their homes.

New Inventions.

A NEW ASPIRATOR.

THE aspirator here illustrated constitutes a new departure from the instruments of the same nature at present in use, and will be found to simplify the apparatus greatly, as well as to present new features of advantage in practical working. The instrument consists of a valve chamber A, attached to the ordinary aspirator bottle; the vacuum, or negative pressure in the bottle, being produced with a syringe connected by means of rubber tubing to the valve chamber. No exhaust pump is required, the instrument being so designed that it will work with any ordinary syringe, such as an ear syringe. It has been tested with the cheap glass syringe that can be bought at any chemist's shop, and this





Valve chamber in section.

has been proved to be quite efficient. It is the working of the valve chamber that gives the special features to the instrument. The instrument works as follows:—The valve chamber having been connected with the syringe the stop-cock E is turned off; the syringe is then used as a pump. On pulling out the piston of the syringe the ball valve B rises, and air is extracted from the bottle, at the same time the ball valve at C is sucked down, preventing any air entering the syringe from this part of the valve chamber. On pushing back the piston of the syringe, the ball valve at C rises and the air in the syringe is expelled at D, no air entering the bottle on account of the ball valve B falling and being held tightly in position by the suction in the bottle. By pumping with the syringe air is continually sucked from the bottle, and expelled at D, a very high degree of vacuum being produced in the aspirator bottle. No tap is required between the valve chamber and the aspirator bottle; the ball valve B acting automatically seals the opening from the bottle, thereby preventing any loss of vacuum. The valve chamber consists of a central body and upper and lower caps, which screw to the central body and are fixed with a small catch. The caps enclose the ball valves, and these ball valves fit accurately into seatings similar to a cup and ball. The valve chamber is attached to the aspirator bottle by a taper push joint. It is constructed in such a way that there is nothing to get out of order. It is detachable, and the different parts take to pieces and can be readily sterilised as required. The valve chamber has other minor mechanical refinements which, though necessary for the efficient working of the instrument, it would take up too much space to describe. The advantages of this instrument are:—1. It is a very simple form of aspirator. 2. There is nothing to get out of order. 3. It can be taken to pieces and readily sterilised. 4. It can be operated with an ordinary syringe, no exhaust pump being required. 5. It does away with the tap on the syringe side of the instrument. 6. The valve chamber can be detached and used where suction is required, as in Bier's treatment; attached to a suitable glass receiver it makes a powerful breast pump. 7. The exhaust at D may be used if required as a continuous force pump for either liquids or gases.

The instrument is manufactured by Messrs. Arnold and Sons, Giltspur-street, London, E.C. 1.

Southampton. F. W. HOPE ROBSON, M.D.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

MEETING OF COMITIA.

AN ordinary Comitia of the Royal College of Physicians of London was held on Oct. 30th, Sir NORMAN MOORE, Bart., the President, being in the chair.

In the course of the minutes of the Censors' Board it was announced that Mr. Jack William Jeffery had been appointed twenty-seventh Jenks Scholar.

The following candidates, having passed the necessary examinations, were admitted as Members:—Dr. W. J. Adie, Dr. Phœbe M. Bigland, Dr. F. G. Chandler, Mr. Major Greenwood, Dr. Isaac Jones, Dr. W. B. Knobel, Dr. F. D. H. B. Lawton, Dr. J. E. A. Lynham, Dr. B. T. Parsons-Smith, Dr. W. J. Pearson, Dr. E. L. Pope, Dr. R. M. Ranking, Dr. F. A. Roper, Dr. G. C. Willcocks.

Licences to practise physic were granted to 79 candidates who had conformed to the by-laws and regulations and passed the required examinations.

Communications were received from (1) the secretary of the Royal College of Surgeons of England, dated Oct. 10th, reporting proceedings of the Council of that College on Oct. 9th; (2) the secretary of the Ministry of Health, dated Oct. 6th, enclosing a list of the members of the Consultative Council on Medical and Allied Services.

The REGISTRAR proposed, for the first time, the following temporary by-law: "That Dr. Cuthbert Allan Sprawson, being resident abroad, be admitted to the Fellowship *in absentiâ*, any by-law to the contrary notwithstanding." This was passed.

A report was received from the Committee of Management, dated Oct. 14th, as follows:—

The Committee recommend that the Salford Royal Hospital be added to the list of general hospitals recognised by the Examining Board in England.

The Committee report that under Paragraph VI., Part 1, of the scheme for constituting the Examining Board in England the following members retire by rotation from the Committee: Sir James Galloway, K.B.E., C.B.; Sir George H. Makins, G.C.M.G., C.B.

On the nomination of the PRESIDENT, Sir James Galloway was reappointed a member of the Committee of Management.

After some formal College business, the PRESIDENT declared the Comitia dissolved.

AUXILIARY ROYAL ARMY MEDICAL CORPS FUNDS.—The usual quarterly committee meeting was held on Oct. 31st at 11, Chandos-street, Cavendish-square, W. Five grants were made to cases in the Benevolent Branch for Officers amounting to £350, and 62 grants in the Relief Branch for the rank and file amounting to £2007 5s. These Funds are for the relief of widows and orphans of commissioned officers and non-commissioned officers and men of the rank and file of the Royal Army Medical Corps, Special Reserve, Territorial Force, and New Armies, and also for the relief of the children of those who have been so severely damaged in the present war that they need help for the education of children. Requests for relief should be addressed to the honorary secretary, at the offices of the Funds, at 11 Chandos-street, Cavendish-street, W. 1.

FRENCH SUPPLEMENT TO THE LANCET

Under the Editorial Direction of

Professor CHARLES ACHARD, PROFESSOR OF PATHOLOGY AND THERAPEUTICS IN THE UNIVERSITY OF PARIS.

AND

Dr. CHARLES FLANDIN, D.S.O., CHEF DE CLINIQUE A LA FACULTÉ DE PARIS.

SECONDARY ECHINOCOCCUS.

By F. DÉVÉ,

PROFESSOR AT THE SCHOOL OF MEDICINE, ROUEN.

In distinction to primary echinococcus, which is connected with the local development of a hexacanthous embryo implanted from without, secondary echinococcus is characterised by heterotopous grafting and colonisation of germs set at liberty by the rupture of a fertile hydatid cyst within the same individual. Indeed, each of the parasitic elements—daughter-cysts, brood-capsules, and scolices—contained in a fertile mother-vesicle is able on transplantation to produce directly a new hydatid cyst. This pathogenetic conception is of modern development.

History.

The manifold hydatid cysts of the abdomen and pelvis, which form the most common and remarkable examples of the process, have certainly long been known to clinical and anatomical pathologists. But their development was explained erroneously. It was held that all these cysts were primary and that they owed their origin to the infestation of the individual by manifold hexacanthous embryos which had migrated through the walls of the alimentary tract into the subperitoneal cellular tissue.

In 1793 J. Hunter first put forth the suggestion that the hydatid cysts of the pelvis might be caused by the reimplantation of hydatids projected into the abdominal cavity by the rupture of a visceral cyst. This pathogenetic hypothesis was abandoned in consequence of the criticisms and doctrinal assertions of Charcot (1852) and Davaine (1857), but was destined to be revived by Bright. Long before Volkmann (1877), to whom German authors have, without any warrant, attributed this important idea, R. Bright pointed out very clearly *the danger of hydatid dissemination in the course of operations and punctures.*[1] In France, Potain (1877) called the attention of doctors to the possibility of grafting hydatids into the abdomen after the rupture of a cyst in the liver. From the year 1880 onwards a certain number of clinical facts were made known in various places which tended to support this view.

Still, a great number of pathologists remained doubtful. A series of objections of a clinical, anatomo-pathological, and especially zoological kind were made to the theory of hydatic graft. Doubt was thrown upon the cystic transformation of the scolices previously described by Naunyn (1862), and it was even flatly denied by leading helminthologists. As late as 1900 it could be called a "zoological heresy."

The *experimental method* was, however, destined to break down this resistance. In 1889 Lebedeff and Andreef showed that hydatids placed in the peritoneum of the rabbit graft themselves and continue to develop there. In 1898 Alexinsky established that hydatid sand, when inoculated into the abdominal cavity of the rabbit, caused living hydatid cysts. My own researches (1900–1901) confirmed these previously ascertained results, and defined them more clearly by showing irrefutably the actuality of the vesicular evolution of the scolex. In an inaugural thesis I gave the first connected study of what it was suggested should be called "secondary echinococcus," pointing out the important and hitherto unsuspected place of this process in hydatid pathology.[2]

[1] R. Bright: Clinical Memoirs on Abdominal Tumours and Intumescence. London, 1861, p. 55.
[2] F. Dévé: De l'échinococcose secondaire, Thèse, Paris, 1901.

Pathogenesis.

A priori there is in itself nothing remarkable in a hydatid daughter-cyst which has fallen into the peritoneum, continuing to live in the serous membrane after having encysted itself there. So this particular process was accepted without great difficulty. But that such a highly differentiated element as the *scolex*, the small *tænia-head* with its rostellum, its crown of hooks and its suckers could graft itself into the tissues and transform itself there *directly* into a hydatid, was such a "wonderful" regressive metamorphosis" that it might well appear to be "truly antiphysiological" and "impossible."

None the less, *the vesicular evolution of the scolex* is a fact. Moreover, the procedure is exceedingly simple. The scolex increases in volume and becomes to some extent hydropic; the hydatid development which goes on in its inmost recesses stretches its protoplasmic reticulum and compresses it towards the periphery; finally, it spreads it out in form of a thin plasmodial (the future germinal) layer on the internal face of the cuticle. The latter becomes thicker and soon presents a characteristic stratification. As for the crown of hooks, which has quickly fallen into confusion, its elements are found reassembled within the thickness of the germinal layer in the shape of an accumulation of 32 to 36 interlocked hooks, which present the "signature" of the original scolex. From this point onwards we have to deal with a completely living hydatid cyst, destined to become fertile.[3]

We have lingered a little in describing this remarkable vesicular transformation of the scolex, because it seems that in the pathogenesis of secondary echinococcus the *grafting of the scolex* plays a far more important and general part than the "grafting of the hydatids" properly so-called, to which reference is usually made. As a matter of fact, it is noticeable that pockets with multivesicular contents represent an inconstant, and to some extent fortuitous, form of the hydatid cyst.[4] These multivesicular cysts have no tendency to burst spontaneously in the serous membranes (absence of intracystic tension, usual thickness of the adventitious capsule, relative frequency of adhesive pericystitis). Finally, the complex contents of the cysts in question are often septic, hence frequent occurrence under similar conditions of more or less serious peritoneal accidents.

Being elements which are at one and the same time constant, resisting (cuticle), full of vitality (glycogen), microscopic (135 μ) and really innumerable (400,000 per cubic centimetre of hydatid sand), the *scolices* may be found distributed in every direction, carried along by the plentiful aseptic hydatid fluid. *Their impalpable dust confers on the cystic liquid absolute conditions for causing infection.*

Thus, in the rupture of univesicular fertile cysts—the typical form of hydatid cysts—the echinococcus dust alone is responsible. It alone is also to be blamed in cases of hydatid grafts following on capillary punctures. Being practically invisible in the course of surgical interventions it again is at the bottom of most post-operative relapses. Finally the scolex dust is the only parasitic element intervening in metastatic echinococcus, for when the daughter-cysts are carried into the circulation of the blood, they always bring about brutal mechanical accidents, hydatid embolisms, which are rapidly fatal.

Pathogenic Forms.

The echinococcus graft may remain localised, or, on the contrary, it may spread in the neighbouring tissues. Very often it spreads over the whole surface of a serous membrane.

[3] Archives de Parasitologie, 1902, vi., p. 54.
[4] La Presse médicale, August 8th, 1918.

Sometimes it makes use of the circulation as a path by the help of which to reproduce its characteristic lesions at a distance. Finally, and exceptionally, its elements may colonise a system of mucous canals. We propose to review briefly these various pathogenetic *modalités*, selecting the most typical example of each case.

1. *Local Secondary Echinococcus.*

Although it occurs very rarely, echinococcus of the heart will provide us with a most instructive example of the process.[5] A fertile hydatid cyst of the myocardium bursts spontaneously in one of the cardiac cavities. Contrary to what might be expected in such a case, survival is the rule when the cyst does not contain hydatids. Beside the specific microscopic elements projected into the circulation, which move off to form distant colonies (we shall come back to this process directly), there remains a certain number of scolices in the cyst invaded by the blood. The clot which is formed in this pocket contains a whole host of scolices, which undergo vesicular evolution on the spot. Months or years afterwards a polycystic mass will be found projecting more or less into the cardiac cavity in place of the old unilocular cyst, which has burst.

The same process governs post-operative relapses which sometimes develop in the actual cavity of cysts (in the brain or the liver) which have been surgically evacuated with insufficient precautions. Cases of relapse in the cicatrix left by the operation, or in the subjacent operative region, are not exceptional and belong also to local echinococcus grafts.

2. *Diffuse or Interstitial Secondary Echinococcus.*

This phenomenon is observed almost exclusively in cysts of the muscles and bones. Its pathogenetic mechanism is as follows: A univesicular muscular hydatid cyst bursts by reason of a contraction having abruptly exaggerated its internal tension. Flooding the neighbouring relaxed conjoining spaces, the cystic liquid distends them into real "balls of œdema." The interstitial hydatid inundation brought about in this way (it is often facilitated by the "massage" caused by the muscular contractions) infiltrates into the intermuscular and perivascular connecting planes. Now this inundation brings with it its own specific "silt," which is deposited in the connective meshwork. Hence, there occurs later a colonisation of hydatid cysts systematised in the intermuscular spaces and the vascular sheaths of an anatomical region.

3. *Secondary Echinococcus of Serous Membranes.*

The common case of a cyst of the liver which has burst into the peritoneum may here serve as an example. Let us first recall that, contrarily to what was so long classic doctrine, serous membranes usually remain indifferent to the presence of hydatid tumours in the subjacent viscera; as a rule, hydatid cysts of the liver, if not complicated, project freely into the peritoneal cavity." In that case the univesicular hydatid tumour—a voluminous incompressible "ball of water"—on bursting or fissuring abruptly under the influence of a sometimes very slight pressure, which has exaggerated its tension, will inundate the whole abdomen and disseminate the hydatid sand floating in its liquid. The echinococcus germs will be deposited in the smallest recesses of the serous membrane of the peritoneum, notably in its lowest portions: Douglas's cul-de-sac, iliac fossæ, hernial sacs.[6] Another favourite seat is the epiploon, the net charged with the duty of gathering up the foreign bodies existing in a free state in the peritoneal cavity.

This is the origin of the multiple cysts of the abdomen, observed in 15 per cent. of the cases of hepatic echinococcus, which become apparent two, three, five, or ten years after the initial more or less latent rupture. By reason of its extent, its diffusion, the often innumerable multiplicity of its elementary lesions, secondary echinococcus of the peritoneum presents almost all the characteristics of a malignant affection. Moreover, it often produces in the mind of the operator a feeling of powerlessness and discouragement. It is important to react vigorously against this feeling. We shall return later to this point. With regard to the pathogenesis of this affection, it is a peculiarity which at first sight seems paradoxical, and long led observers astray, that all the cysts are covered by the peritoneal endothelium; they are *subserous*. It was this circumstance that persuaded the old anatomo-pathologists that the cysts in question are acquainted with some extraperitoneal approach (interstitial migration of the hexacanthus embryos, advance in the subperitoneal lymphatics). This subperitoneal seat of the parasitic tumours is explained by a process of fibrinous envelopment, which is in our days well known and is common to all foreign bodies in the serous membranes.

As a rule, secondary echinococcus of the abdomino-pelvic cavity owes its origin to the rupture of a hydatid cyst of the liver. But the original cyst may sometimes have its seat in the spleen, and exceptionally in the kidney or the mesentery.

To the same physio-pathological causation there are due, on the one hand, secondary echinococcus *of the pleura*, following on the intrathoracic rupture of a cyst of the lung, liver, or spleen, and, on the other, secondary echinococcus *of the pericardium*, connected with the intramembranous rupture of a primitive cyst of the heart.[7]

4. *Embolic or Metastatic Secondary Echinococcus.*

The large sanguineous cavities are just as little protected as the serous membranes against the rupture of subjacent hydatid cysts projecting more or less into their bore. The minute scolices projected into the circulation by the rupture of the cyst are arrested by the capillary filter of the corresponding vascular system and carry out their further cystic development there. This is the pathogenesis of "hydatid metastases," the theory of which had already been formulated by Budd.[8]

These metastases affect the venous circulatory system or the great arterial circulatory system. A varying and relatively peripheral starting-point (iliac region, liver, right side of the heart) and a constant, central point of arrival (the lung); these are the characteristics of the process in cases of venous metastatic echinococcus. For arterial metastatic echinococcus the pathogenetic conditions are the inverse: the starting-point, central and constant (left side of the heart), the points of arrival, peripheral and multiple (brain, spleen, kidney, liver, muscle, bone).

In both varieties the embolic secondary echinococcus is characterised by the multiplicity of the visceral cysts, the approximate uniformity and relative smallness of their bodies, their bilateral cortical distribution, and finally by their vascular connexions, which are sometimes still recognisable. The cysts in question coexist with a cyst situated at a higher point on the sanguineous circulation, a cyst which is clearly of older date and presents certain characteristics testifying to its antecedent rupture.[9]

5. *Secondary Echinococcus of Mucous Membranes.*

This last form of secondary echinococcus consists of the colonisation of echinococcus germs in a system of mucous canals. A univesicular cyst of the lung bursts in a bronchus, flooding the bronchial tree and sowing its specific sand. Of course, most of the parasitic elements are expelled by means of expectoration, but a certain number of scolices can pursue their cystic evolution in the extremities of the bronchial ramifications. We have made experimental proof of this process, several examples of which have been observed in human pathology.[10] A colony of the same type may be developed at the inside of the biliary ducts, the pelvis of the kidney, the uterine tubes, or even the ileo-cæcal appendix. But these are, indeed, exceptional cases.

SYMPTOMATOLOGY AND EVOLUTION.

From the point of their general symptomatology and evolution the various varieties of spontaneous secondary echinococcus require the following stages: firstly, an *initial cataclysmic stage*, marking the rupture of the original cyst; secondly, a *latent stage*, more or less prolonged, corresponding to the silent germination of the echinococcus seeds; thirdly, a *phase of progressive appearing*, during the course of which the cysts, having slowly increased in volume, begin to bring about some functional disturbance or become perceptible to various means of clinical exploration (vaginal or rectal palpation, radioscopy); and fourthly and lastly, a *static phase* with complications.

In certain cases a *spontaneous involution* of the cysts is observed, accompanied by infiltration of cholesterin and calcareous elements. There may be a premature arrest in

[5] Soc. de Biologie, Oct. 21st, 1916. [6] Ibid., Nov. 10th, 1917.

[7] Soc. de Biologie, Dec. 18th, 1915. [8] Budd: Diseases of the Liver, 1852.

[9] Cf. Mme Boppe: L'échinococcose pulmonaire métastatique, Thèse, Paris, 1916. Mlle Dumont: L'échinococcose cérébrale métastatique, Thèse, Toulouse, 1918. [10] Soc. de Biologie, July 16th, 1904.

the development of the echinococcus grafts. This gives rise to the formation of small granulations imitating tuberculosis, which constitute *pseudo-tuberculous hydatid*.[11]

The Share taken by Secondary Echinococcus in Hydatid Pathology.

One of the great anatomical characteristics of secondary echinococcus is the *multiplicity of cysts*. This multiplicity is very naturally to be explained by the simultaneous dissemination of a large number of hydatid germs scattered by the rupture of the fertile cyst. But the primitive echinococcus may itself be multiple, for this multi-infestation, regular in animals, is far from rare in man. According to investigations *primitive* cysts in man are *multiple in more than a quarter of the cases* (28 per cent.). Now, it must be remembered that in such circumstances *two-thirds of the cysts are situated in the liver*. Hence the conclusion that "when in the case of a person affected by multiple hydatid cysts, the number of extra-hepatic cysts considerably exceeds the proportion of one-third, there are a priori grounds for suspecting the intervention of secondary echinococcus."[12]

Let us now rapidly review the principle localisations of hydatid disease, in order to ascertain the share which falls to secondary echinococcus. Even though multiple the cysts of the *liver* are most often primitive. Two exceptions must be borne in mind, though they are not equally important. They relate to (*a*) perihepatic cysts, which are more or less deeply set in the capsule of the liver and belong to the class of secondary echinococcus of the hepatic peritoneum; (*b*) hepato-biliary cysts, subsequent to a cyst of the liver opening into the biliary canalisation. The former are as frequent as the latter are rare.

Similarly, cysts of the *lung* are almost always primitive. Three exceptions, which on account of their rarity are nearly negligible, are connected with secondary cysts of the visceral pleura or with metastatic pulmonary cysts, or, finally, with broncho-pulmonary grafts consequent on a hydatid vomica.

The cysts of the *spleen* are primitive, exception being made in favour of perisplenic peritoneal cysts and the very rare metastatic cysts associated with an old hydatid cyst of the left side of the heart. Hydatid cysts of the *kidney* are also primitive, if we eliminate the juxtarenal peritoneal cysts. Metastatic echinococcus of the kidney, which is by the way exceedingly rare, does not give rise to symptoms.

Cerebral echinococcus is also nearly always primitive, especially in the case of children. Still the discovery of multiple cysts of the encephalon must call immediate attention to the eventuality of embolic secondary echinococcus with a cardiac starting-point.

On the other hand, with reference to *multiple hydatid cysts of the abdomen*, the position which is taken up in this thesis is to-day hardly contested—viz., that "these cysts are nearly always secondary and have for origin the apparent or latent rupture, which may be traumatic or spontaneous, of a visceral cyst which in the vast majority of cases has its seat in the liver."

The same remark applies to the multiple varieties of *hydatid cysts of the pelvis*. Until a recent period these cysts were looked upon as of primitive origin in the various pelvic organs. Most surgeons and gynæcologists now adopt the view which we took in our inaugural thesis: "as a rule cysts of the pelvis are secondary cysts of the pelvic peritoneum." Douglas's hydatid cysts, those of the ovary, the Fallopian tubes, the broad ligaments, the uterus, the bladder, the prostate, &c., all these various classic rubrics—like those of hydatid cysts of the epiploon, the mesentery, the mesocolon, the appendix, &c.—must henceforward disappear from statistics of primitive echinococcus, for, excluding a few exceptional cases, all these cysts only represent secondary localisations of the hydatid malady.

Prognosis.

The diffusion of the lesions, the insidious compressions which they occasion (rectum, bladder, ureters), the adhesions which accompany them and make their extirpation so difficult, and, on the other hand, the fragile nature of the cysts, their frequent bursting in the course of operations, thus exposing the patients at once to the dangers of hydatid poisoning and of a specific re-sowing of germs; all these peculiarities explain the seriousness of secondary echinococcus of the abdomino-pelvic cavity and increase the importance of its prophylaxis.

Prophylaxis of Secondary Echinococcus.

Hydatid dissemination may be caused by the spontaneous rupture of a fertile cyst; it may also be produced artificially by a medical puncture; finally, it may be brought about just as artificially by the surgeon in the course of some intervention. Hence the following prophylactic maxims may be laid down:—

1. Endeavour to recognise hydatid cysts betimes; seek them in adolescents and in children.
2. Never make either exploratory or therapeutic punctures into a hydatid cyst.
3. Operate as soon as the cysts are recognised.
4. Operate correctly, striving to avoid insemination of living echinococcus germs, which is a possible cause of hydatid relapse after operation.

The relative frequency and seriousness of these cases of *relapse due to operation* have been mistakenly contested by certain surgeons. As for their frequency, we know at present of about a hundred authentic cases of this type, most of them having been observed within the last 20 years. According to some modern statistics, the relative frequency of the complications in question can be estimated as three or four per 100 operations. As for the gravity of the relapse, it is well to remember that, by the side of benignant forms in which the graft has developed superficially in the cicatrix of the operation, deeply seated relapses have been found, calling for one or more serious operations. In a certain number of cases patients who have been operated upon have succumbed as the result of the cysts having been spread over the whole of the abdominal cavity.

Hydatid relapse is therefore not, as has been said, a "practically negligible complication." And if it is shown that a simple and harmless practice—"*formolage*"—is mostly sufficient to safeguard the patient the surgeon would be foolish to neglect this precaution. In this connexion we recall the view expressed some years ago by Dr. Barnett, an experienced surgeon in New Zealand: "Some surgeons pay little attention to the risk of post-operative recurrence due to the grafting or dissemination of hydatid material. ..... My own personal knowledge of eight such cases has led me to adopt the formolisation method of Dr. Dévé."[13]

Preliminary formolisation is performed after laparotomy has been carried out, the cyst being under the finger of the operator and the peritoneum being protected. The operation comprehends three stages: (*a*) Evacuating puncture of the cyst; (*b*) injection into the now evacuated cystic cavity of an almost equal quantity of 1 or 2 per cent. solution of formalin, which is left in contact with the pocket for four to five minutes; (*c*) evacuation of the parasiticide solution. The parasite is now sterilised. The operation may be continued according to the method chosen.[14]

Although easily practicable and perfectly efficacious in the case of univesicular hydatid cysts, this preliminary parasiticide injection unfortunately becomes insufficient and often impossible to accomplish in the case of multivesicular cysts. We have, then, to be content with cleansing the evacuated pocket with some parasiticide (formalin, ether).

Surgical Treatment of Secondary Echinococcus of the Abdomen.

When faced with multiple cysts of the abdomen the operator must avoid two faults, still often committed. The first consists in being discouraged by the multiplicity of the cysts and the prospect of their recurrence, and giving it up or closing the stomach. *These patients must not be given up, they must be operated upon.* The second error consists in wishing to accomplish the complete eradication of the lesions in a single operation. Multiple echinococcus of the abdomen calls for prudent treatment "in small doses," in *successive interventions*. Partial clearances must therefore be made, first of all by means of sub-pubic laparotomy, taking in hand the pelvic cystic masses (dangerous on account of latent compression of the ureters). Pediculate cysts, those of the omentum, are extirpated without preliminary formolisation. As for sessile cysts, which are

[11] Cf. J. Le Nouëne: La Pseudo-tuberculose hydatique du péritoine, Thèse, Paris, 1912.

[12] Soc. de Biologie, Nov. 24th, 1917.

[13] L. E. Barnett, Intercol. Med. Congress of Australia, Auckland, February, 1914.

[14] Cf. L. Quemin: L'injection parasiticide préalable dans le traitement opératoire des kystes hydatiques, Thèse, Paris, 1909. G. Bezière: Contribution à l'étude du formolage préalable des kystes hydatiques (Temps opératoire de F. Dévé), Thèse, Paris, 1914.

difficult and dangerous to enucleate, we may restrict ourselves to treatment by *formolisation in situ*, with the aid of a "trocar formolateur."[15] It is not necessary to be unreasonably worried by the small cysts which may escape operation. Very many of them will spontaneously proceed to involution.

Surgery may succeed in restoring these patients entirely. But, failing an absolute cure, it will often procure for them a long survival compatible with an active existence.

A CASE OF
PERITONEAL ECHINOCOCCUS.[1]

BY CHARLES FLANDIN,
CHEF DE CLINIQUE MÉDICALE AT THE FACULTY OF MEDICINE IN PARIS.

On April 1st, 1919, Mme. B., a servant, 49 years old, came into Professor Chauffard's Clinic at St. Antoine's Hospital. She complained of pain in the right thigh and of tumours in the abdomen. She looks rather older than her actual age, but has a fresh, ruddy face. There are no feverish symptoms, her appetite is excellent, and the digestive organs work normally.

Attention is at once directed to the abdomen. It is large, but without excess of fat, and seems tumid in the two iliac fossæ, especially on the right side. A long median cicatrix runs nearly from the ensiform cartilage to the os pubis. It is a clean cicatrix, but in the neighbourhood of the navel there is a hernial protrusion for several centimetres, and below the cicatrix there are three regularly rounded tumours, smooth and mobile. One of them is as big as a walnut, the two others as big as cherries.

Palpation of the abdomen reveals a hard diffuse distension, giving a sensation analogous to that of a cæcum filled with solid matter. It is more fully developed on the right side, but it certainly seems to be an unbroken mass, going down into the pelvis and filling it completely. Vaginal palpation confirms this impression. A normal cervix is found, hard, regular, a little depressed and pushed back. It is impossible to identify the uterine body in the midst of a hard compact mass, giving the impression that the pelvis has been filled with cement. No sensation is transmitted from vaginal finger to abdominal hand, nor reciprocally. In fine, physical examination suggests a cancerous infiltration of the whole pelvis, starting near the abdomen. But there are not at present any uterine symptoms, and the excellent general state of health does not favour this hypothesis. Moreover, the other organs are healthy. The liver is rather large, 14 cm. along the mammillary line, somewhat hard, but not deformed. Radiological examination proves its regularity, besides verifying the appearance and normal functioning of the intestine.

The diagnosis would have been singularly difficult had not the small tumours discovered on the surface of the cicatrix suggested the idea of a hydatid cyst, which was turned into certainty by the history of the patient. The woman had, indeed, been already operated upon three times. We have only very scanty information about the first operation, which took place at 25 years of age and affected the pelvic organs. It is an important circumstance that she had a violent attack of generalised urticaria. It is well known how frequently this occurs after the opening of a hydatid cyst. After this operation menstruation ceased and the usual disturbances, such as premature menopause, attacks of heat, embonpoint, &c., made their appearance.

At 39 years of age there came an attack of icterus caused by retention, with severe pains in the region of the liver. About every six months since then there occur painful attacks of such violence that syncope and bilious vomiting often supervened. During the course of one of these abdominal attacks in 1913 M. Le Noir, a physician of St. Antoine, found a regularly rounded tumour, which caused no pain, on the median line in the subumbilical region. On his advice Professor Lejars carried out an operation, which was so successful that the patient was able to leave the hospital in a week. But the painful attacks, combined with syncope, soon reappeared and a fresh tumour formed in the neighbourhood of the navel.

Professor Lejars operated again on Feb. 24th, 1915. The report runs: "Hydatid cyst of the umbilicus—incision and ablation—reunion." After this third operation the relief given was very marked; the painful attacks diminished both in intensity and frequence. But from 1917 onwards the small tumours, which we noticed in the cicatrix, began to grow and the stomach gradually increased in size. Finally, for some months painful irradiations in the right thigh in the domain of the sciatic and crural nerves became more frequent and led the patient to come again for advice.

The history of the patient therefore confirms our diagnosis, which may be formulated as follows: *Multiple recurring hydatid cysts of the abdomen and pelvis.*

If we had no operative proof of the correctness of our diagnosis, the laboratory could give us useful information. Firstly, the complement-fixation reaction. But this only indicates probability, for it is often negative in the case of closed cysts; and, on the other hand, it has been found positive in the absence of hydatid cysts, notably in the case of sarcoma. Secondly, the examination of the blood, which in our case gave the following results:—

Neutrophil multinuclears	40 per cent.
Eosinophil ,, ...	*30* ,,
Mononuclears	17 ,,
Lymphocytes	13 ,,

The huge number of eosinophils is a strong argument in favour of the theory of a hydatid cyst. It is, however, often observed to disappear in the hours subsequent to the operation.

What is the origin of these hydatid cysts of the abdomen, the first manifestation of which dates back for 24 years? In view of our knowledge of abdominal echinococcus in man it is hardly probable that the cysts of the pelvis operated upon 24 years previously were the original tumours. Dévé's patient researches have shown that hydatid cysts of the peritoneum are practically always consecutive on the rupture of a hydatid cyst of the liver. This original tumour was not found in our patient. But was it looked for? Is a hydatid cyst of the liver at present still in existence? Clinical knowledge cannot yet give a sure answer. In the meantime, we must stick to the long story which the patient has to relate of most painful abdominal attacks in the region of the liver. Are they connected with inflammatory attacks, with pericystic reactions? It is very possible. However that may be, clinical and radiological examinations are at present negative. Although we may suggest to the surgeon to take advantage of laparotomy, one cannot say that a hydatid cyst of the liver still exists.

From the therapeutic point of view we turn for the fourth time to surgery for help; indeed, if a hydatid cyst is diagnosed, operation is imperative. In the case of our patient everything points to the progressive growth of pelvic cysts. The indications of compression are already manifesting themselves—pains in the domain of the sciatic and crural nerves. The evolution of the tumour may cause an increase of these pains and, what would be more serious, the compression of the veins, arteries, ureters, and intestines, bringing with it grave functional disorders. One of the complications to be apprehended is the rupture of cysts and their fresh dissemination. For all these reasons an operation is necessary. But it is a long and difficult one, in which the surgeon must not leave a single cyst alive. It is as simple to remove a large hydatid cyst after formolisation as it is difficult to clear a peritoneum and, above all, a pelvis filled with secondary cysts like a bag of walnuts. Especially when they are sessile, all the small tumours cannot be removed. They must be punctured and sterilised one by one by the use of formalin, otherwise there is the risk of recurrent development, as in the case of our patient. Finally, as we have already said, the liver must be explored and we must seek for the primitive cyst, which is perhaps still active, in any case very old, dating back, in some patients, to early infancy, as Dévé has found. The prognosis is therefore serious, whether the patient is left to herself, with the risk of the compression and rupture of which we have spoken, or whether an operation is performed. We adopt the latter alternative without any hesitation, but the immediate danger must be faced, that the operation will be long and serious if the surgeon attempts a radical cure, which may possibly leave some living vesicles destined to evolve in the direction of increasing size or of rupture and secondary insemination. In other words, it is not at all certain that the operation to be attempted will be the last.

From this observation it will be seen how difficult is the diagnosis and treatment of secondary echinococcus of the peritoneum.

[15] Arch. génér. de Chirurgie, June 25th, 1913.

[1] From Professor Chauffard's Clinic.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 8, 1919.

General Medical Council Election.

THE following is the official list of those duly nominated as candidates for the election of Direct Representatives for England:—R. A. BOLAM, O.B.E., M.D., Newcastle-on-Tyne; J. BROWN, M.D., Blackpool; W. F. H. COKE, M.R.C.S., Ashford; J. A. MACDONALD, M.D., Taunton; G. A. MAIN, M.B., Stockport; A. BLACKHALL-MORISON, M.D., F.R.C.P., London; E. H. M. STANCOMB, M.B., Southampton; E. B. TURNER, F.R.C.S., London; Sir T. JENNER VERRALL, M.R.C.S., Bath; A. WELPLY, M.D., London. The voting papers are being issued to-day. The counting of the votes will be finished on Wednesday evening, Nov. 19th. The last election was held in 1911.

Of the candidates, Dr. BOLAM, Dr. MACDONALD, Mr. TURNER, and Sir T. JENNER VERRALL were chosen by the British Medical Association, at the last annual meeting of Representatives, to be supported by the Association at the coming election. Dr. MACDONALD and Sir T. JENNER VERRALL are seeking re-election, while Dr. BOLAM and Mr. TURNER are contesting the constituency for the vacant seats of Dr. LANGLEY BROWNE and Dr. H. A. LATIMER. The joint election address of these four candidates will be found in our issue of Oct. 18th. The chief points in their programme are that the developments under the Ministry of Health will call for serious consideration by the General Medical Council, and that the dangers of unqualified practice and the regulation of medical education require earnest attention by the same body. In a covering letter issued to the constituency by the four candidates it is pointed out that discussions of medical politics are frequent at the British Medical Association, so that members of the General Medical Council, in touch with the Association, would be familiar with medical opinion on the great problems of public health. Dr. COKE, Dr. MAIN, Dr. STANCOMB, and Dr. WELPLY are nominees of the Medico-Political Union. Their joint address is published in our columns this week, in which they suggest that the changes in the panel and other medical services raise new ethical questions which must be looked at essentially from the general practitioner's point of view; while they make the special and valuable point that in the reform of medical education the general practitioner should have a considerable voice in the necessary reconstruction. In the opinion of the nominees of the Medico-Political Union, itself a democratic body, the General Medical Council should be composed entirely of representatives directly elected by the whole profession. The candidates put forward by the British Medical Association and by the Medico-Political Union alike appeal to the constituency on the unassailable ground that the more information as to general practice which is placed at the disposal of the General Medical Council the more effective will that body be; but while the nominees of the Association hold that the experience afforded by official work in that large and powerful body affords the necessary equipment, the nominees of the Medico-Political Union would have all the General Medical Council chosen by popular vote, leaving it to the constituency as a mass to select the men in whose work for the profession the greatest public confidence is felt. Dr. BLACKHALL-MORISON is standing by the nomination of the National Medical Union, a body whose policy is for the most part opposed to developments of panel practice, believing that they may eventuate in that medical trade-unionism which is the ideal of many members of the Medico-Political Union. His address is also published in our columns this week, and his candidature is supported by the Scottish Medical Guild. Dr. JOHN BROWN is standing as an independent candidate, going to the poll in protest against the nomination by the British Medical Association of four candidates for the four vacancies. He makes an interesting point in his election address when he suggests that, if the English constituency were divided into four for electoral purposes, the cost to intending candidates would be by so much lighter. The ten candidates have placed their views succinctly before our readers, and an interesting contest should ensue, turning upon the support which different groups of political thought will receive from the voters, all the candidates having the same object—namely, the advance in status and efficiency of that great bulk of the medical profession which has the care of the health of the people in its direct charge.

Three candidates are in the field for the seat of Direct Representative for Scotland—namely, Dr. NORMAN WALKER, the sitting representative, Dr. MICHAEL DEWAR, of Edinburgh, and Dr. EBENEZER DUNCAN, of Glasgow. The views of all three have been published in our columns, and notes of their public statements have appeared in our Scottish correspondence. Dr. EBENEZER DUNCAN in his address makes some detailed recommendations for the reform of the medical curriculum, and as a general practitioner has had first-hand experience in the problems of medical life. The same point is made by Dr. MICHAEL DEWAR, who comes forward as "a general practitioner in active practice ..... strenuously engaged for the last 17 years or more in furthering the interests of the profession." Dr. NORMAN WALKER has been the Direct Representative for Scotland on the General Medical Council for the last 13 years, and in that position is able to address the voters upon the reorganisation of the medical curriculum in a way which has a valuable bearing on the previous work of the Council, and on the duties which certainly will devolve upon that body through the setting up of a Ministry of Health. Throughout his public pronouncements he shows his familiarity with all sides of professional life, and as there is nothing stale or reactionary in his proposals, but, on the contrary, as they are mainly young and progressive ones, the chief argument for replacing an old and tried servant is removed. No doubt the opposing candidates would, in his absence, be strong ones, but with Dr. WALKER in the field we do not expect to see any change in the representation in Scotland. In Ireland Dr. LEONARD KIDD, the sitting member, proposes to offer himself for re-election as Direct Representative, when he will be opposed by Dr. J. C. MCWALTER, coming forward as "a candidate representing the interests of the Irish doctors who have served in the R.A.M.C.," which may be a persuasive card to play in the election, but will probably not divert the necessary support from Dr. KIDD.

The Needs of the Average Student.

WE publish this week an address upon medical education delivered before the Manchester Medical Society by Sir GEORGE MAKINS, President of the Royal College of Surgeons of England, in which he institutes an inquiry into what changes can be made for the better in the preliminary and intermediate sections of the medical curriculum, asking, also, whether the teaching of the final subjects, as at present carried on, is adapted to the production both of practising doctors and of those whose duty it is to further the advance of medical science and to serve as pioneers and teachers of others. Often as the subject of medical education has been discussed of late by persons in a position to know what they are talking about, and by some not so fortunately placed, we doubt whether the underlying problems involved in the education of the doctor have ever been more simply exposed than they are in Sir GEORGE MAKINS'S address; for he shows how they are all associated with the fact that the art of medicine as displayed in clinical practice, and the science of medicine as advanced by research, while closely interlocked and while equally founded on exact observation, do not lend themselves after certain preliminary stages to a common course of education. The same discovery has been made by those who have attempted to combine in one school the teaching of students and of graduates. To meet the position Sir GEORGE MAKINS suggests a re-grouping of the subjects which the sorely tried medical student has to master before admission to the Register, the re-grouping taking something the shape of the simpler course laid out for the student 30 years ago, but strengthened and cemented by our vastly increased range of physiological knowledge and its application.

In connexion with Sir GEORGE MAKINS'S plan for making the teaching of physiology progress in the student's course together with the study of anatomy and in sympathy with the teaching of the chemical and pathological laboratories, we are reminded that a work on mammalian physiology,[1] recently reviewed in our columns, approached the same main topics in a different way. For the great bulk of the medical profession a path must be found by which advances in science can be utilised in daily practice, without making the useless attempt to endow all medical students with the knowledge, to say nothing of the temperament, needed to carry on scientific research. We are of opinion that Professor SHERRINGTON'S practical courses on mammalian physiology and clinical physiology represent a movement at Oxford which may ultimately affect teaching in all our medical schools. In a recent course of lectures Professor ARTHUR KEITH[2] introduced the principles of orthopædic surgery to his audiences by bringing before them the circumstances amidst which the discoveries underlying our modern methods of orthopædic treatment were made. Professor SHERRINGTON'S aim is more ambitious: he has carried his method from the physiological department to the wards of the hospital. There his students are practised in the application of means for the exact estimation of vital phenomena as seen in the disordered working of the human body; they are taught how to apply the instruments of research to clinical discovery. The new courses represent a further application of HUXLEY'S dictum—one rendered possible by the "discovery" of the decerebrate rabbit and cat—that the student of every subject should perform the fundamental experiments in the laboratory for himself. HUXLEY was the inventor of the "type system" of education—one which dominates all biological and physiological teaching more and more. There cannot be any doubt that its adoption has given Britain the most progressive school of physiologists in the world—a school she has reason to be proud of. The effect of the Huxleyan methods of education on the student who merely wishes to become, or by force of circumstances actually does become, a general practitioner, is another matter—one which has not received sufficient consideration. What if the pathologist, the bacteriologist, the physiological chemist, the pharmacologist, the zoologist, botanist, chemist, and embryologist also set up courses of the same scope as Professor SHERRINGTON'S? In his later years Professor HUXLEY was clearly conscious of the difficulties which attend too great a specialisation in the teaching of the multitude of subjects now set before a medical student. In 1892 he wrote in a letter to Sir E. RAY LANKESTER:—

> "The problem of the medical university is to make an average man into a good practical doctor before he is twenty-two and with not more expense than can be afforded by the class from which doctors are recruited. ..... It is not right to sacrifice such men, and the public on whom they practise, for the prospect of making one per cent. of medical students into men of science" ("Life and Letters," ii., p. 310).

HUXLEY'S final verdict is one which must not be lost sight of, for it is not infrequent to find those who are now legislating for medical students expressing themselves as if every student was a potential discoverer. And it is exactly here that Sir GEORGE MAKINS supports HUXLEY'S view. Men who have had long experience in teaching know that the art of discovery is in medicine, as in painting, music, poetry, or fiction—a gift from the gods. For the realisation of that gift there must be tuition, practice, and opportunity. HUXLEY, we believe, underestimated the proportion of gifted students; experience leads us to believe that in every hundred there are at least five who will really know how the frontiers of knowledge can be extended. For the 5 per cent. such courses as those of Professor SHERRINGTON are ideal; but even when we admit that physiology is the most fundamental subject taught in medicine we have still to consider the case of the 95. We do not say that there should not be schools which cater only for gifted students; indeed, there is much to urge in favour of medical schools, such as the Oxford School, doing so. We have to consider the effect of such courses on all schools. It is true that in elaborate practical courses students learn the art of applying apparatus; they have opportunities of becoming manipulative experts in the performance of surgical operations; they are brought face to face with structures in a living condition. The teacher of anatomy claims that somewhat similar advantages accrue to the student in the dissecting room, but he has learned by experience that a man may dissect, in the deftest and neatest manner, the human body twice over and yet have no practical or permanent knowledge of what he has seen or done. There was no more enthusiastic follower of HUXLEY than Sir MICHAEL FOSTER, but he took care to write a text-book which

[1] Mammalian Physiology: A Course of Practical Exercises, 1919, by Professor C. S. Sherrington, F.R.S.

[2] Published under the title "Menders of the Maimed," 1919.

gave his students a just perspective of the physiology of his day. His text-book proved a sheet anchor for the 95 per cent. of Cambridge students who were to practise general medicine. It was from the systematic lectures of the master that the average student drew both inspiration and practical knowledge.

Annotations.

"Ne quid nimis."

THE CALL OF THE ALPS.

THE short and gloomy days, coupled with the recent premature attack of London fog, have revived in many breasts the call of the Alps which has lain dormant for a long while past. The clear and keen air, even in the absence of the Alpine sun, makes living a pleasure to all whose tissues respond without murmur to a greatly increased demand upon them. The winter sun itself puts in something over one-half of its possible attendances and its comforting rays must be felt to be believed in. There is no dispute as to the vivifying influence which they exert, and already numbers of fortunate folk have secured passports for a period of release at or about Christmastide. They will avoid what is, perhaps, the hardest thing to bear with equanimity in our own climate, that as soon as the organism is set for one type of temperature and energy demand, a different demand, larger or smaller, occurs. There is, we repeat, no dispute as to the stimulating quality of the air and the intensity of the insolation at a level of 5000 ft. or more on the Central European plateau. Within these limits different Swiss resorts naturally make the most of the special wares which they can offer to a clientele in search of health or relaxation, while they sometimes yield to an undignified attempt to push one resort at the expense of another. Sir Henry Lunn, in a circular, dated Oct. 23rd, addressed to a fellow medical man, after pointing out quite fairly the advantages of Montana in the Rhone Valley as a climatic station for chest cases, goes on to give a comparative schedule of sunshine at this and four other well-known Swiss resorts, based upon an observation made by the secretary of the Public Alpine Sports Club in 1908. The hours of sunshine are stated for the various skating rinks on a particular winter day, presumably that of the secretary's visit, atmospheric conditions such as clouds and mist being eliminated. Montana Palace Rink heads the list (Dec. 1st) with 7 hrs. 45 mins., Davos (Nov. 25th), Chateau d'Oex (Dec. 29th), Arosa (Dec. 29th) following in diminishing splendour, and St. Moritz (Jan. 1st) brings up the rear with 4 hrs. 7 mins. Sir Henry Lunn suggests in his circular that it will be obvious from these figures that in the matter of sunshine Montana has great advantages over certain well-known resorts "on the German side of Switzerland." The figures show nothing of the sort. The sun is higher on Dec. 1st than on Dec. 29th and Jan. 1st. The skating-rink at Davos is down in the flat bottom of the valley, and is not frequented by the visitors who are basking on the sunny slope of the valley until the sun in time reaches it. At Arosa the skating-rink of 1908 has since been moved to a spot which gets hours more of sunshine. St. Moritz never had a public rink, and one at least of the private ones is exposed to sunshine to the point of ennui. It would be easy in any Alpine resort to choose spots not many hundred yards apart at which the insolation varies by hours. An obtrusive distant mountain peak or the spur of a nearer hill may make all the difference. Within a single resort the differences are as great as between far distant places. Montana needs no such invidious comparison to recommend it as a goal of the winter pilgrim's progress. At the same time, a circular letter has reached us, signed by the British Vice-Consul and Dr. A. F. Bill, resident British physician at Davos Platz, designed to correct erroneous impressions prevalent in the United Kingdom regarding present conditions of food and fuel supply at Davos. After allaying anxiety on this score, they go on to combat "the suspicion that Davos is overrun with Germans," stating that a veritable exodus of Central European visitors has occurred with the mark fallen to 17 centimes and the krone to approaching zero. Here, also, facts are against them. In the last official returns of visitors 920 Germans and 192 Austrians and Hungarians are numbered, as against 47 British, 54 French, and 27 Belgians. In all cases except the second the figures show an increase on the preceding week. But let it be added at once that the point is irrelevant. All are guests of the Swiss nation, which, whether speaking French, German, Italian, Ladin or Romansh, is Swiss to the backbone. Montana is doubtless less accessible to visitors coming from the Central Empires, but the longer journey did not prevent the Engadin being a British resort for a generation, and the line delimiting French and German speaking Switzerland passes very near Montana, if not through it. But the call of the Alps drowns such idle wrangling.

A LIVING FOREIGN BODY IN THE LARYNX.

UNDER this title Dr. J. Barthès has described in the *Revue de Laryngologie, d'Otologie, et de Rhinologie* a very rare and interesting case. A man, aged 51 years, came under observation. For three weeks he had suffered from complete aphonia accompanied by paroxysmal cough and abundant hæmoptysis. Nothing relieved the cough and expectoration. His general condition changed, although his appetite remained excellent, for sleep was constantly interrupted by a very painful sensation of pricking localised in the cricoid region. While the patient was giving his history a curious phenomenon was observed. He began in a weak, almost whispering voice, but suddenly his voice regained its normal tone, and Dr. Barthès was astonished to hear that this change occurred at short intervals. The pharynx showed nothing in particular. In the larynx the ventricles and cords were slightly congested. Below the anterior commissure a litle black cylinder was seen against the upper rings of the trachea. While wondering what this body was it moved and ascended so as to lodge between the vocal cords. Dr. Barthès stopped the examination and the patient's voice was again lost. The mechanism of the intermittent aphonia was evident; it could only be due to a leech which according as it was in the larynx or trachea interfered with or allowed free movement of the vocal cords. On being questioned, the patient said that three weeks ago while walking in the country he drank from a brook and at that moment felt an obstruction in his throat. Dr. Barthès advised

extraction under chloroform by means of Brünings's tube. He feared that if local anæsthesia were used the cocaine would cause the leech to loosen its hold and drop into one of the bronchi, but the patient objected strongly to general anæsthesia. Fortunately the pharynx and larynx were large and tolerant. After anæsthetising the base of the tongue and the pharynx a tampon of cotton wool from which excess of cocaine solution had been squeezed, so that none should run down into the trachea, was introduced into the larynx. The leech was in the tracheal position. The ventricles and cords were painted several times until sufficient anæsthesia was induced. A laryngeal forceps with teeth opening laterally was introduced. At this moment the leech made a movement of ascension. It was seized and loosened its hold, and was removed alive. The leech measured 6 cm. It is remarkable that it should have remained three weeks in one place without loosening its hold. In spite of his success Dr. Barthès does not think that living foreign bodies should be removed from the larynx by the indirect method. It is more prudent to use direct laryngoscopy by means of Brünings's tube, but this requires general anæsthesia.

THE NURSE'S BEST WEAPON.

A CROWDED meeting was held at the Mortimer Hall, London, on Oct. 25th for the purpose of considering the formation of a professional association for the mutual help and protection of trained nurses and the registration thereof as a trade-union. No information was made public as to who promoted the meeting, but the *British Journal of Nursing*, which prints the most circumstantial account of it, states that the proposal to form a trade-union came from the rank and file of the nurses themselves. The chair was taken by Miss MacCallum, who, we learn from the same source, is a private nurse and a member of the Nurses Coöperation. The meeting was opened by a statement from a solicitor of the objects to be secured by the proposed Professional Union of Trained Nurses. These include, among others, the promotion and protection of the profession of trained nurses, the State registration of all trained nurses, the establishment of an employment agency, the securing of a minimum rate of remuneration and maximum working hours, the regulation of the relationship between trained nurses and employers, the promotion of industrial peace and progress, the provision of clubs, hostels, beds in hospitals, medical and dental advice, sick fund and annuities for nurses, and, finally, the taking of any lawful action to protect and safeguard the members of the Union. The chairman mentioned that the mere fact of having the power to strike would be a wonderful weapon in the hands of nurses. The question of partially trained labour occupied a large part of the attention of the meeting. Sir Arthur Stanley's recent statement that there was a great field for voluntary aid in connexion with the Ministries of Health and of Pensions, and Dr. Addison's welcome to the assistance of the V.A.D., raised the fear that the untrained or partially trained woman was to do nurses' work and take nurses' fees. Some lively passages occurred in the meeting between the chairman and some who espoused the cause of the College of Nursing, with 16,000 names on its register; but at the close a resolution put from the chair, "That immediate steps be taken to form a professional union (registered under the Trade-Union Act) for the mutual help and protection of trained women nurses," was held to be passed by a large majority of those present.

We regard it as certain that the medical profession will sympathise to the full with the aim of nurses to unite in an association which will be able to ensure fair individual treatment to its members by collective bargaining, to institute a system of mutual insurance, and to bring electoral pressure to bear on the legislature. All these advantages of union are possessed by the medical profession, which up to the present has not as a whole felt it necessary or desirable to form a trade-union for the purpose. It is not easy to see what weapon other than the general strike would be gained by registration, and the odium incurred by nurses in a general strike would not be less than that attaching to a similar action on the part of doctors. Miss Jentie Paterson, a member of the National Union of Trained Nurses, suggested at the meeting that the nurse who nowadays claims nursing as a vocation would have nothing to look forward to but the workhouse and a peg whereon to hang her halo. But we doubt the wisdom of the epigram. Appreciation of nursing as a gentle art is still regarded as an asset by nurses except those of the extreme left group. The proper function of an extreme left is, we take it, in all popular assemblies to stimulate the centre and make the rank and file stand up for the legitimate rights of the guild. The tendency of trade-unionism in these latter times has, unfortunately, been towards autocratic rule and the abolition of private rights. The results already effected by voluntary professional organisation of nurses are sufficiently encouraging to assure a new future if persisted in. Undoubtedly the readiness of the public to exploit a fine spirit has been a leading factor in goading a section of the nursing profession to extreme measures. The record of the voluntary hospitals in this respect has been such as would have shamed any private employer. But the treatment meted out to the trained nurse by unscrupulous employers, in so far as it is due to the lack of unified organisation, may be rectified by a strong association calculated to make itself felt on the nurses' behalf. By avoiding the militant spirit such an association may maintain for nurses the high professional honour and esteem which have been deservedly won.

VACCINE TREATMENT OF ACUTE OSTEOMYELITIS.

Professor Raymond Grégoire[1] records six cases of acute staphylococcal osteomyelitis in children successfully treated by vaccines which had been prepared by Dr. Salimbeni at the Institut Pasteur. The vaccine employed on admission to hospital was always a stock vaccine, and the subsequent injections were often made with an auto-vaccine. The first dose consisted of 1/10 c.cm., which contained 200 million organisms. Subsequent injections were given of 2/10 c.cm. or 4/10 c.cm. A minimum of two injections and a maximum of four were needed to effect a cure. The reaction, both local and general, following the injection of the vaccine was always very slight, the principal symptoms being acceleration of the pulse and transient albuminuria. The first signs of improvement appeared 24, or more frequently 48, hours after the

[1] Paris Médical, 1919, ii., 285-294.

first injection, the general condition being affected before the local state. The general symptoms often disappeared with extraordinary rapidity, and the child was able to make use of his limbs without any pain in from two to four weeks' time. Hyperostosis was one of the most frequent results of the treatment and was not, however, constant, and, contrary to what generally occurs after acute suppurative processes in bone, a complete recovery took place in some cases. Vaccine treatment is contraindicated in septicæmic forms of acute osteomyelitis. Grégoire relates two examples of this kind which ended fatally in spite of operation and vaccine treatment.

DUODENAL FEEDING.

IN an account of his experiences of duodenal feeding at U.S. Army General Hospital, No. 41, Buckstein[1] emphasises the importance of the drop method of feeding, as the syringe proposed by Einhorn may produce distension, pain, and nausea. The rate best suited can be determined only by the study of the individual case. Though no definite feeding formula can be laid down, the average mixture employed by Buckstein contained 150 c.cm. of peptonised milk, 70 g. of glucose, two eggs, and 40 g. of butter. In a patient weighing 60 kg., who is at rest, such a mixture given three times a day is sufficient to sustain his bodily requirements. The length of time the tube is allowed to remain must vary with the age and recuperative power of the individual, as well as with the chronicity and severity of the lesion. To determine the effect of treatment the patient is fed by mouth while the tube is still in situ. When the food by mouth can be increased one of the tube feeds is omitted, and finally duodenal alimentation is dispensed with entirely and the tube is removed. On the other hand, if pain recurs on feeding by mouth duodenal alimentation is continued.

THE OPENING OF THE SESSION AT KING'S COLLEGE HOSPITAL.

THE address delivered by the Right Hon. T. J. Macnamara at the postponed opening of the winter session of King's College Hospital Medical School on Oct. 31st was for the most part a eulogy of the work done by qualified medical men and women throughout the war. It is curious that on these occasions mention is rarely made of those unqualified students who sacrificed six months or a year of their studies as probationary surgeons on torpedo-boat destroyers or other small craft. They endured not only personal danger but boredom, unrelieved as a rule by any compensation in the way of professional experience; the strain of their life at sea has made it difficult for them to settle down to work for examinations, and in most cases they qualify later than those students of the same year who did not volunteer but worked with no disturbance of their curriculum and good chances for valuable house appointments. We have no doubt that the Admiralty are fully conscious of the debt we all owe to these men, and that it was an oversight only that prevented Dr. Macnamara from making a special reference to it. He dealt with the great advances made in pathology and surgical skill in the last 50 years, and prophesied that the next great step would be in the direction of preventive medicine. As Member for North Camberwell he expressed his satisfaction that so famous an institution as King's College Hospital should have moved to the borough, and urged his fellow-residents to furnish, regularly and systematically, the necessary means for its continued efficient maintenance.

[1] Journal of the American Medical Association, 1919, lxxiii., 670–672.

VACCINATION FEES.

THERE was a time, a quinquennium or so ago, when a silver half-crown purchased half-a-crown's worth of goods. It has long ceased to do so, and the public vaccinator, remunerated in the clumsy way of a fixed fee, has been receiving less and less real recompense for the same work. The logical way to deal with the matter would have been by bonus, strictly proportional to the increased cost of living (or the decreased value of money), as in the case of civil servants generally. But this has not been done. In an Order, which is to come into force on Dec. 1st, the Minister of Health has fixed the fee for successful vaccination at "not less than 5*s*." and has issued instructions to this effect to the boards of guardians. It is understood (by the Minister at all events) that the sum of 5*s*. is only a minimum, so that it is open to guardians, with Ministerial approval, to pay a higher fee. The Order does not affect public vaccinators who are already receiving the new minimum or more than it. The whole question of payment by a fixed fee in equivalent for work done needs reconsidering, and unless subject to frequent revision some other basis than that of the fluctuating pound and shilling may have to be found.

REFORM OF THE COLONIAL MEDICAL SERVICE.

Lord Milner, Secretary of State for the Colonies, has appointed a committee to consider the position of the medical services of the various colonies and dependencies, with a view to maintaining and increasing the supply of candidates and to securing contentment within the service; and to consider whether the principle of assimilating the medical services of neighbouring colonies may usefully be extended and, if so, how far and by what means. The members of the committee are: Chairman, Sir Walter Egerton, K.C.M.G., late Governor of British Guiana, and recently chairman of the Pool (Petroleum Supplies) Board; Lieutenant-Colonel Sir Harry Verney, Bart., D.S.O.; Sir Humphry D. Rolleston, Sir W. B. Leishman, Sir J. Kingston Fowler, Mr. T. Hood, Director of the Medical and Sanitary Service, Nigeria; Mr. A. Fiddian, principal clerk, Colonial Office; with Mr. J. E. W. Flood, of the Colonial Office, as secretary.

THE CLASSIFICATION OF MENTAL ABILITY.

IT will be remembered that in Erewhon, Samuel Butler's brilliant satire on crime and criminals, ill-health is a crime punishable by imprisonment, while moral lapses, such as forgery and larceny, are treated by the family "straightener" with the attention due to an invalid. There is a growing movement towards more rational and differential treatment of accused persons, and it is even conceivable that future generations may read in Erewhon prophecies rather than whimsicalities. At any rate, the employment of psychologists in connexion with courts of justice, one of the steps

advocated by that earnest body entitled, "The Penal Reform League," has been in practice in the United States. Dr. J. M. McCallie has published certain results obtained by this method in the American Army, and it is interesting to note that a majority of cases of absence without leave, desertion, confinement to barracks, and reduction in rank occur among men found to be below the average of intelligence, as shown by the tests employed, and the use of psychologists to investigate the mentality of criminals might well have fruitful results. The tests recorded were used on American soldiers by psychologists specially appointed for the purpose of segregating and eliminating the incompetent, classifying the men according to mental capacity, and assisting in the selection of men for responsible positions. Surgeon-General Gorgas, commenting on the experiment, said:—

"The classification of men according to mental ability as determined by these tests has corresponded in a very striking way with the estimate previously made by officers familiar with them, and men selected for responsible positions solely on their psychological record have fully justified such selections."

What is more, he ordered the method to be used in classifying all newly enlisted men, so that more than a million recruits have been submitted thereto. We regret to hear that, according to tests applied to 2000 officers in Camp Lee, the order of intelligence was as follows: Engineers, artillery, infantry, quarter-masters, and lastly, medical officers!

Sir John Tweedy has chosen "The Surgical Tradition" as the title of his Thomas Vicary lecture.

THE tablets at University College in memory of Lord Lister are to be unveiled at 5 P.M. on Tuesday next by Sir George Makins, President of the Royal College of Surgeons of England, and Sir Joseph Thomson, President of the Royal Society. The Duke of Bedford will preside. Academic dress is to be worn.

AT the next meeting of the Section of Obstetrics and Gynæcology of the Royal Society of Medicine, on Dec. 4th, the report upon the teaching of obstetrics and gynæcology (THE LANCET, Sept. 13th, p. 494) will come up for discussion, followed by the criticism upon it by Lady Barrett, Dr. Herbert Spencer, and Dr. H. Williamson.

WE have received from the Ministry of Health the draft terms of service for practitioners in 1920 under the National Health Insurance. These have been circulated to Insurance and Panel Committees and are subject to alteration before the formal draft is prepared and published. These terms of service will form the principal object of discussion at the Conference of Representatives of Local Medical and Panel Committees on Nov. 27th.

ARRANGEMENTS are being made by the Royal Army Medical Corps to train men not over 21 years of age as pharmacists, dispensers, dental mechanics, X ray, mental, and laboratory attendants, as well as for work as masseurs, opticians, nursing orderlies, and hospital cooks. The engagement will be for the customary period of seven years. The uncertainty of the future may deter some from entering, but the civil medical profession will greatly gain from a supply of trained technical assistants.

THE PREVENTION OF VENEREAL DISEASES IN THEORY AND IN EXPERIENCE.

BY DOUGLAS WHITE, M.D.

THE recent comments of THE LANCET (Oct. 18th, pp. 701–2) on the prophylaxis controversy are full of interest, and many will sympathise with the desire for "a thorough investigation of the ethical and scientific fundamentals involved." Most thoughtful people will agree that science and ethics cannot, in the last resort, be at variance. "Ethics" denotes principles of right conduct in relation to social and other environment. Science is the elucidation of principles which govern physical, physiological, and social processes. Ethics and science interdigitate. I cannot myself see how public health and public morals can be mutually antagonistic. They run along parallel lines, meeting at infinity, but they never run in opposite directions nor cross each other's path. He (or she) who works at the one is (often quite unconsciously) advancing the other. The man on the railway trolley who pushes round one wheel is making the other wheels all to revolve as well. Human society is all one; public health and public morals are names given to its state of progress in two aspects. To some this will appear platitude, to others nonsense; to me it appears as a criterion of sound judgment and public policy. In the light of this principle we can clear away certain misconceptions regarding this category of disease; for there can be no case where public health and public morals have more obviously common concern than in the matter of venereal diseases.

The Relation of Morals to Health.

Some writers of the prophylactic school accuse their opponents of refusing to adopt their "obvious" remedy for fear of lowering the moral standard; they say that medicine has nothing to do with morals; they propose to divide the thing into two water-tight compartments. An influential letter to the *Times* (Jan. 2nd, 1919) says: "Extraneous considerations can have no place in sanitary problems," which being interpreted, means that social ethics and sexual disease are independent problems. Truly an amazing doctrine! Why, the sanitary problem would not exist apart from the social habit of sex-promiscuity; this is the ultimate *fons et origo* of disease. To tinker with results and neglect causes is not consonant with a wide scientific outlook. The sooner we extend our conceptions of "science" and "nature" to include social and psychological phenomena the better. To narrow their meaning to the revelations of the microscope and test-tube is a serious evil.

But others go even further in throwing dirt at members of the medical profession who hold social ethics in high regard. These are represented as wishing to keep disease in existence as a jumping-off ground for ethics. Cruel and stupid misrepresentation could go no further. Sexual ethic does not depend on the existence of disease, either for its life or for its growth; disease is but a complication and impediment; morality is a necessity of civilised life quite apart from disease. Disease is to be strangled by every legitimate means. The reason why unethical means is to be avoided is because, inter alia, it will fail of its remedial object.

No thoughtful person nowadays thinks of disease as a Divine retribution for wrong action. The innocent suffer with, and often more than, the guilty; injustice cannot figure in the purpose of the Almighty. Disease, moreover, is deleterious to the morals of both men and women; it ties women to a life of vice, and drives men to reckless despair; cure of disease, on the contrary, has a wholly moralising influence; it has both a direct and indirect effect in prevention.

The Reform of Social Tradition.

But—at least in our present imperfect state of knowledge—elimination of disease cannot be looked for apart or separate from social reform, and specially the reform of our *social tradition*. We are all aware of the imperious strength of the primitive sexual instinct; many are unaware of the artificial stimulus which is given to it by the current social tradition,

specially among men, with regard to sex; the tradition of the dual standard for men and women, and of the necessity of indulgence for men.

Morals, we are told, have been tried for 2000 years and have been found wanting. But have they *ever* been tried intelligently? Never up till the other day (as it were) has there been a serious attempt to give deliberate and rational instruction to the youth of the country in sexual ethic or sexual hygiene; the traditions are very old, and have been passed on, quietly but effectively, without contradiction, from one generation of young men to another. This tradition is powerful and cannot be fought with the blunt weapon of general morality; the teaching must be sharp, incisive, particular. The social basis of sexual ethic must be made clear to men's minds. The biological and social sanctions for stable monogamy must form the background of the ideal sex-relation, while at the other extreme commercialised vice, devoid of sentiment, degrades the individuals concerned and disintegrates the roots of civilisation.

The breaking up of this bad tradition and the removal of this and other adventitious stimuli to sex-indulgence—such as overcrowding and starvation wages of women—would accomplish a great deal in the prevention of venereal disease.

The Place of Fear.

How far is fear of disease to be regarded as a force in its prevention? "Fear of disease," the writer in THE LANCET says, "connotes no ethical or religious quality." A merely selfish fear does not touch the domain of morals at all. The man who *simply* from fear of contracting disease avoids taking the risk is not on that account more moral than the man who is not deterred by the same fear; he is more prudent, but not more moral. Yet I think the influence of selfish fear has been under-rated; self-interest is a powerful motive, and its lessons are readily assimilated. Fear does play a part in preventing many people from seeking exposure, and does drive men to treatment. Nor is fear a contemptible thing; the instructed man who does not fear syphilis is a fool. Fear is not a synonym for cowardice, nor recklessness for courage.

Moreover, fear is not always, or even generally, purely selfish. It usually has in this connexion some social colouring: fear for one's own family, fear of what others will think—Such fears cross the border-line of ethics. And—the practical point—whether fear be purely selfish or partly altruistic, every young man and woman has a right to know the facts. "Why was I not told?" has been a frequent and well-founded complaint. It is also certain that they should be taught to seek treatment on the first suspicion of disease. Prompt treatment is clearly in the interest of prevention.

The Prophylactic Controversy.

It is agreed that the prompt and thorough use of certain disinfectants immediately after exposure diminishes the risk of disease. Some advocate self-application to ensure promptness; others disinfection-centres to secure thoroughness. Against disinfection-centres it is urged that a sufficiency of such places is not practicable for the civil population, and that they involve delay; both, in my judgment, true bills. Against self-disinfection it is urged that self-disinfection is popularly indistinguishable from self-treatment, and actually leads to self-treatment, which is medically anathema; also that the chemicals are often used in a perfunctory and ineffective manner; true bills also. I might add, that while I regard the use of prophylactic packets as generally demoralising, on the other hand, I cannot regard the popular use of multiple disinfection stations in every town (if it could be done) as an addition to the amenities of urban life.

Now, there is nothing immoral in the knowledge of the use of disinfectants, nor, indeed, in the actual use of them. The application of antiseptics does not make an act of fornication more or less ethical; in itself it is neutral. But it does make a vast difference in what spirit their use is made known. If the teaching can be interpreted as an encouragement to vice then it is contrary to public policy. In practice, the use of packets is apt to be pressed on the audience as the main point of the address, and only slight or no stress laid on their liability to fail. Where it is not the main point of the address it is dragged in at the end as a proper safeguard in case of lapse, and this is taken by the audience to be the real point; the last word sticks.

The *in*security of these methods of self-disinfection must be stressed if such knowledge is to be spread. I should not like to face a man or woman who had contracted disease (genital or extragenital) under an impression gained from me that certain drugs afforded security. Hence, if I instructed at all in their use, I should do so in a negative way, by preaching their insecurity rather than their relative safety.

The Moral Standard of the British.

We are told that, since 70 per cent. of Englishmen (I don't know the basis for the figures) contract some form of venereal at some time in their lives, the moral standard could not be much lowered anyhow. This is sheer nonsense. Suppose the figures are correct, as is quite possible. All of us know of men whose moral and social standards are quite high, but who have lapsed once or twice. They very frequently are laid low their first night out. If, on the average, *every* man in England had been once the victim of one or other disease, our national standard would still be decidedly higher than that, say, of Germany. Professor Blaschko, for instance, considers that in Berlin each male inhabitant, by the time he has reached the age of 30, has (on the average) had gonorrhœa three times and every fourth or fifth man has contracted syphilis.

I am told that (at least, before the war) prophylactics were in vulgar use in Germany. Vice, disease, and prophylactics all thriving together in symbiotic amity. You may say the packets are not properly used; that is my point; they never will be. If, again, you blame the lower tone of Germany, that is an admission that "morals" are some good after all.

Social Policy.

But really it is our business to probe deeper than the superficial quarrel as to the best methods of early disinfection. We are dealing with the strongest primitive instincts of humanity. It is not really a medical question of the relative bactericidal values of chemicals, but a social question of the ultimate effects of a line of social policy. The antiseptic values being settled the medical man, as such, is no better qualified than other persons of intelligence to determine how or whether such knowledge can be effectively introduced into social life.

It must already be clear that we can argue for ever about two methods of disinfection, and the relative values of the adoption of one course or the other, or both, or neither. To decide the question we need experience. An ounce of experience is worth a ton of argument.

The Facts of Experience.

The experience of the war is already ours, though it has not yet been fully described. Some of the facts have been published in the White Paper recently issued. But better still, for general purposes, is the outline recently given by Brevet Colonel L. W. Harrison (Adviser on Venereal Disease to the Army Medical Department)—than whom no man has a fuller right to be heard—in a speech at the Congress of the Royal Sanitary Institute this summer.[1] I wish THE LANCET would produce it in full. His remarks will bring surprise to many. In the army, at any rate, we should have expected that with abundant facilities, and with constant and careful instruction of the men (whether in the use of packets or disinfection centres), a sensible reduction of disease would have been achieved. Yet in the British Army of the United Kingdom, as a whole, in spite of every effort, the rate of admission has remained steady at 38 per 1000 per annum—the same at the end of the war as before the introduction of early disinfection or prophylactics. This rate was greatly lower than those of the Dominion armies in England, though their disinfection propaganda was more intense. The rate of the Australian force (in England) started at 130 per 1000, and in spite of the most vigorous measures of the same kind, finished at a still higher figure.

What is to blame? The antiseptics used? No; they do give a sensible effect if promptly and thoroughly applied. The inability to use them properly? Perhaps; and yet the men had all been instructed in their use till they were sick of it. Is it that prophylactic packets tend to increase vice? Possibly; yet no better results were obtained from early disinfection centres, which were thoroughly exploited. It is a problem for the psychologist.

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[1] Journ. Roy. San. Inst., September, 1919, pp. 100–101.

As a result of his experience, "Colonel Harrison is opposed to the method of prophylaxis by means of disinfectants for use by the individual, so far as they apply to the civil community." He states that in certain units a definite reduction was attained owing to the energy, wisdom, and tact of the medical officers; but this was exceptional. So it appears that in an experience with millions of men, over a long period, a thorough and varied propaganda of disinfection after exposure has resulted in no change, in some cases even deterioration. We may rub our eyes. Disinfection is so obvious and sure a remedy. So it is. Obvious—and wrong. In political, social, industrial life the obvious is often wrong. It seems to be wrong here.

A More Hopeful Direction.

Theory must sit at the feet of experience. This experience is certainly not encouraging. Has Colonel Harrison any note of hope along other lines? Yes; he points to the pre-war reduction of admissions in the Home Army, in 30 years, from 275 per 1000 to 51 per 1000, and states that the great factor has been improvement of social conditions and encouragement of games; no direct means of prophylaxis was employed. In another paper he has shown that the Aldershot record is even better (322 per 1000 to 30 per 1000), where social conditions were at their best. This is nothing short of a revolution in the incidence of disease, and shows the *rapid* ameliorative effect of improved conditions of life. This method is not obvious, but it appears to be right. Needless to say, Colonel Harrison insists on the earliest and most thorough treatment of disease, the wide education of the public, and the fullest training of the greatest number of medical men for the work; but at the moment we are thinking of prevention, not treatment.

A Novel "Far Niente."

The manifesto of the new Venereal Prevention Committee says: "There are evidently only three possible courses: (1) no action apart from moral teaching; (2) delayed disinfection; (3) immediate disinfection." They consider (1) a failure, (2) a rather stupid second-best, (3) the real thing. But what if both (2) and (3) are failures in actual practice? Is there *nothing* left but the despised trifle of moral teaching? Did the army authorities do *nothing* these 30 years at Aldershot? Then, for God's sake, let us do nothing with equal diligence, all the time, with both hands.

We are all so busy seeking royal roads to glory. In the life of a nation they do not exist. It used to be the compulsory treatment of women prostitutes (the medical profession was nearly solid for it); now it is the voluntary disinfection of men; to-morrow it will be I know not what. I am quite sure there is no royal road to freedom from venereal disease. There is a long, straight hill to climb. Adequate facilities for treatment—as yet only partially secured; adequate instruction of the public—only partly done; progressive social improvement and reform; raising of social habits and ideals. All this may seem nothing in the eyes of some people; but so far as experience points it is the true line of advance.

Conclusion.

Let us not build our temple of health in a fool's paradise. Let us study the facts of the war; it affords the largest experience ever gained. I, for one, should welcome all possible information as to these facts. There must be much of real significance which might well be published without doing any kind of harm. If the Army Medical Department were prepared to give the profession and the public a full analysis of their experiences they would throw invaluable light on the road along which we have to travel, and would save us from many pitfalls, even allowing for the differences between military and civilian conditions. In the light of established fact most of us, I think, for the nation's good will be ready to lay aside our pet prejudices, and, escaping from the quicksand of unsupported hypothesis, to set our feet upon the rock of fact.

Dr. S. A. Kinnier Wilson has been appointed junior neurologist to King's College Hospital.

TUBERCULOSIS SOCIETY.—A general meeting of this society will be held to-day (Friday) at 15, Allsopp-place, Marylebone (behind Baker-street Station), at 8 P.M., to receive the report of the executive committee.

GENERAL MEDICAL COUNCIL ELECTION.

THE NOMINEES OF THE MEDICO-POLITICAL UNION.

To Registered Practitioners of England and Wales.

LADIES AND GENTLEMEN,—The Medico-Political Union has asked us to contest the four seats for Direct Representatives to the General Medical Council for England and Wales. The Medico-Political Union is a democratic body, and as officials and members of that body we hold progressive views.

The General Medical Council prescribes the standard of medical education and controls the conduct of the medical man. This body, holding in its hands the economic life of the doctor, should, in our opinion, be composed entirely of representatives directly elected by the whole profession. Six directly elected out of a total of 38 is not indicative of representative government; only three members of the late General Medical Council could be called general practitioners. Three-fourths of the medical services of this country are undertaken by the general practitioner, consequently he is in the best position to recognise the medical needs of the community.

Changes in panel and other medical services raise new ethical questions which must be looked at essentially from the general practitioner's point of view.

An intimate knowledge of the whole trend of medical politics, of the effect of new Government orders, rules and regulations, remuneration and practice expenses as they affect the general practitioner, is absolutely necessary for any body wielding the immense powers of the General Medical Council.

Medical education needs overhauling, and the general practitioner should have a considerable voice in the educational reconstruction essential to produce and maintain an efficient medical service by a constant supply of the best type of student. Medical legislation will always affect the general practitioner more than other branches of the profession. It is, therefore, necessary that the general practitioner should be represented largely on the General Medical Council in order powerfully to influence the actions of that body.

We, general practitioners of considerable experience, ask for your support and vote; in the event of your electing us we shall always endeavour to maintain the honour and dignity of the profession to which we belong, and to safeguard the interests of our constituents.

Yours faithfully,

WILLIAM FRANCIS HARRIOTT COKF,
President, Medico-Political Union; Secretary, Kent Local Medical and Panel Committee; Hon. Secretary, Kent Hospitals Committee; Member, Kent Insurance Committee.

GEORGE AGNEW MAIN,
Organising Secretary, Medico-Political Union; late Secretary, Salford Local Medical and Panel Committee.

ERNEST H. M. STANCOMB,
Vice-President, Medico-Political Union; Chairman, Southampton Panel Committee; Vice-President, British Federation of Medical and Allied Societies; Member, Southampton Borough Council.

ALFRED WELPLY,
General Secretary, Medico-Political Union; late Secretary, London Panel Committee.

THE NOMINEE OF THE NATIONAL MEDICAL UNION.

Address of Dr. Alexander Blackhall-Morison.

DEAR SIR (OR MADAM),—Nominated as a candidate for the Direct Representation of the profession on the General Medical Council in England and Wales by the National Medical Union, with the approval of the Scottish Medical Guild and others in sympathy with their activities, I have the honour to ask your support for my candidature.

The interests of the profession, educational and economic, have not been protected in the recent past to the satisfaction of many by the great corporations and the association numerically the most powerful—namely, the British Medical Association. The latter has nominated four candidates for all the available vacancies in the hope of acquiring the whole influence conferred by Direct Representation in the

Council. Their address issued to the profession is characteristically non-committal. It is probably also, in their view, as much the embodiment of wisdom as it certainly is of prudence. Whether the profession, remembering the not very edifying capitulation of the Association on the eve of the National Insurance legislation, the Medical Benefit Section of which cannot now be regarded with much satisfaction even by its creators, will feel such confidence in the nominees of the Association as to commit to their care its interests, at the present juncture so fateful for its future, remains to be seen. That a very considerable body will not support them is certain.

For myself, it will be my endeavour, if elected, to oppose any curtailment of the work or responsibilities of the general practitioner, believing that this can only lead to his inefficiency, his impoverishment, and the depreciation of his professional status. On him the whole superstructure of the profession rests, and must rest, and on his efficiency and prosperity the public good.

If the Government measures in contemplation under the Ministry of Health conserve these they will have my support; if they threaten them, my opposition. There is, unfortunately, every indication that, by the institution of various public specialisms, the ridiculously imputed recondite nature of which is emphasised, and by a multitude of caudling civic health activities among others than the necessitous poor, the legitimate work and responsibilities of the general practitioner will be seriously affected, whatever his ability to discharge his duties as a physician.

Having had ample opportunity of learning from personal experience the conditions and needs of medical practice, educationally and otherwise, originally as a general practitioner and later as a consultant, I claim to be in a position to serve the interests of the profession both as regards its educational needs and its material welfare.

In conclusion, I have also too high a regard for the mission and status of our calling, and too reverent a memory of the men of culture and research of the past, from whose individual labours the whole profession has derived its beneficent power and the social esteem in which it is held, to advocate the adoption of the trades-union methods of the proletariat to advance our economic interests. These, as is known, are recommended by some, influenced by counsels of economic despair and captivated by the lucrative results of industrial strikes. That such methods will receive any considerable support from the profession is scarcely probable.

My opportunities and principles of service having been and being such, I respectfully solicit the support of all sections of the profession for my candidature.

ALEXANDER BLACKHALL-MORISON,
M.D., F.R.C.P. Lond. & Edin.,

A President (with Professor Russell, of Edinburgh) of the National Medical Union; Senior Physician to the Great Northern Central Hospital, London, &c.

ADDRESS OF DR. JOHN BROWN.

To the Registered Medical Practitioners of England and Wales.

DEAR SIR (OR MADAM),—To my regret I find that on a point of honour I have to enter the arena of the election for a Direct Representative for England and Wales on the General Medical Council." In the *British Medical Journal*, June 10th, 1916, I published a letter, part of which is as follows: "I do protest against the policy adopted in 1906 and in 1911 by which no one, unless a member of the British Medical Association, has 'the ghost of a chance' of being elected as Direct Representative of the profession on the General Medical Council." Before 1906 the contests were free and open to all. The elections were keenly contested. My brother, the late Mr. George Brown, and Mr. George Jackson addressed great public meetings in various parts of England and were successful in the two elections previous to 1906. Then the B.M.A. succeeded in its policy of securing all the Direct Representatives, and also in 1911. Over three years ago I stated, if their policy were again adopted, as a protest, I might be a candidate. My candidature is now before you, and I shall be glad of the support of all those who love a fair field and no favour. I am convinced that the Medical Act of 1886 intended elections to be open to all and not to be the monopoly of any association or caucus. The Medical Act of 1886 needs amending. In 1916 I advocated the formation of four areas for England and Wales, of about 7000 each; the advantages are obvious. The cost would be about one-fourth; candidates would be able to visit the large towns and get into personal touch with the electors. Parliament only can do this. There are many reasons for its early adoption. In my opinion the General Medical Council, the British Medical Association, and other allied societies ought to take up the matter and press it forward.

I have no committee, nor funds, to effectively canvass and circularise an electorate of over 26,000, extending from Land's End to Berwick-on-Tweed, and from the North Sea to the Irish Sea. Yours truly,

JOHN BROWN, M.D.,
Late M.O.H., Bacup.

Hornby-road, Blackpool, Oct. 30th, 1919.

To the Editor of THE LANCET.

SIR,—I have been asked to go forward as a candidate representing the interests of the Irish doctors who have served in the R.A.M.C. I am in general sympathy with the reforms advocated by the British Medical Association.

I am, Sir, yours faithfully,
J. C. MCWALTER, M.D., LL.D.

Dublin, Oct. 31st, 1919.

THE MOTOR EXHIBITION AT OLYMPIA, LONDON.

(BY A SPECIAL MEDICAL CORRESPONDENT.)

THE Thirteenth International Exhibition opens to-day (Friday, Nov. 7th), with all its old interest, after an interval of six years. Many doctors are in need of a car. What is the best course to pursue? Many ask that question. It is difficult to answer. It is easy to say what not to do—that is, not to indulge in a second-hand car. Most second-hand cars, as a result of the present abnormal conditions of the motor market, are on a par with the list prices of new models; but this condition will not last for more than 12 months. At the end of that time the value depreciation will be in excess of the present appreciation. A good many during the war disregarded the recommendations of safety-razor makers, and when the blades were blunt they did not throw them away but had them re-sharpened and re-used them with advantage. A similar economy applies to automobiles. Cars which can be overhauled should be made to last another year, when I believe that mass production will cause comparatively cheap but certainly reliable cars to be procurable without delay in delivery. If a car must be bought, there can be no question that a new one is the most advisable investment.

Some Useful Models.

Many types of vehicle fitted for professional use are on view at the show. The selection is entirely a matter of personal taste and available cash. With the object of assisting my colleagues I have seen several likely models, and out of the 111 stands on which cars are shown I advise for inspection the following, which I am giving in numerical order:—Stand 3, the Lagonda; Stand 17, the 11·9 Bean Car; Stand 36, the Standard; Stand 40, the Overland; Stand 46, the Phœnix; Stand 47, the Vauxhall; Stand 48, the Arrol-Johnson New Victory, at £700 complete; Stand 49, the Sunbeam; Stand 53, the Briton; Stand 54, the Austin New 20 h.p.; Stand 61, the De Dion Bouton; Stand 63, the Rover 12 h.p. and the new 8 h.p.; Stand 66, the Calthorpe; Stand 67, the Angus Sanderson; Stand 73, the Napier; Stand 72, the Armstrong-Siddeley; Stand 77, the Enfield-Allday; Stand 84, the Wolseley; Stand 88, the Humber; Stand 90, the Talbot-Darracq; and Stand 112, the Hupmobile, Scripps Booth, and Dort.

Among these I must confess to fancying, of the light cars, the New Wolseley 10 h.p., which is replacing the old and popular Stellite, the new 12 h.p. Swift, the Standard, and the Little Singer. Among the higher horse-power cars the Angus Sanderson at £450, the Austin 20 h.p. at £495, and the Armstrong-Siddeley six-cylinder chassis at £720 are all worthy of special attention. It is not profitable to attempt to detail the leading features of the individual large number of cars which are exhibited, but it may be of interest briefly to consider the general constructional novelties and tendencies.

War Experiences Embodied in New Designs.

Much has been said about the embodiment of war experiences in the design of new cars. That the last few years have been one long reliability test for cars and engines, which would result in vast changes and improvements, was predicted. Does this Exhibition bear this out? Certainly there is reduction in engine and chassis weight, due to aeroplane experience, teaching the value of the employment of aluminium alloys. The diminished weight is an improvement in efficiency. War experience, too, has produced the radial air-cooled engine, as seen in the Enfield-Allday car. It has also brought about greater accessibility of all vulnerable parts. The Rolls Royce Co., which built one of the most famous war aeroplane engines, show a car that differs but little—except in price—from their pre-war one. Other firms, it is true, as in the case of the radial air-cooled engine already referred to, have revolutionised their designs; and all have certainly revolutionised their cost.

There are more multicylinder cars, and fours are mostly of the monobloc type. The unit system of engine and gear box, doing away with the universal joint between the two, and providing a stiff assembly, attachable at three points to the chassis, has made headway. Detachable heads are more popular, as in the American cars, thus facilitating decarbonisation, and preventing it by the machining of the combustion heads. In the old type they were rough and favoured the deposit of carbon. Overhead valves, in spite of much opposition, have been, with advantage I believe, greatly adopted. The exhaust is now wholly or in part included in the mass of the casting. Electrical starting and lighting have become a definite essential of the usual equipment. The cone type of clutch is still, I am glad to say, popular. The leather or ferodo lining seldom wore, and, when it did, could be easily replaced. With springs under the lining the engagement is always soft and gradual, so I regret that the dry plate of one, two, or three members is gaining ground. The pump-delivered drip-lubrication system persists, but more cars are fitted with force feed to all bearings. On certain cars, such as the Arrol-Johnson Victory model, grease cups are done away with and an automatic oil lubrication of all working parts substituted, which has the advantage of standing a lot of forgetting. The transmission shows little change, the final drive being, as of old, in about the same proportion by crown wheel or worm. Suspension is certainly improved, chiefly as a result of the increased use of cantilever springs. These members, too, are receiving what they always deserved but did not get, some lubrication, by the more universal use of spring gaiters, such as the "Duco." The Zenith carburetter, which gave great satisfaction with aeroplanes, will be found fitted on many of the exhibits. The Zenith Co. is specialising in supplying carburetters definitely to suit most makes of cars, including the Ford, which any owner can himself fit in half an hour. Vacuum petrol feed, as used on the tanks, is to be noted on many cars, which is an advantage, especially when climbing hills, with but little petrol in the tank. Detachable wheels, or demountable rims, such as the Warland, are practically universal, and the latter are strongly to be recommended to the medical man who from necessity or choice looks after his own car.

The body building firms are well represented, and certainly maintain the traditional reputation long ago secured by British coach-builders. If the silk hat once more is the rule for the profession, the closed-in bodies shown will certainly permit of arriving at one'e destination without emerging with a headgear resembling a feather boa.

The general impression I received was that the Exhibition, in the matter of cars, will contain a good many plums, but as to whether the public will be able to enjoy them for some months is, I think, questionable.

Motor Accessories.

The number of accessories shown is legion. Messrs. Adams and Co. have ideal portable jacks; the Apollo Manufacturing Co. an excellent one-piece sparking plug; Messrs. Auster and Messrs. Beaton and Son show the triplex safety glass screen, which, being absolutely unsplinterable, gives the advantage of safety to those seated behind it; Messrs. Brown Bros., Ltd., have a full range of their "Duco" specialties, such as coils, tools, tyre levers, grease guns, horns, mats, mirrors, lamps, number plates, spring gaiters, valve stem lubricators, and endless novelties to delight the heart of the motorist. The Cooper Stewart Co. have various models of their speedometers, the Frood Herbert Co. show samples of their excellent clutch and brake liners, whilst the Klaxon firm exhibit all sorts of mechanical warning signals. Messrs. S. Smith and Sons have an excellent assortment of speedometers, clocks, foot pumps, &c., and their four-jet and the new one-jet carburetter, together with their lighting and engine-starting dynamo, merit attention. Of tyres there is a large assortment, including those of all the leading makers.

NOTES FROM SOUTH AFRICA.

(FROM OUR OWN CORRESPONDENT.)

A Medical School in Johannesburg.

THE scheme for establishing a medical school in Johannesburg has now definitely materialised. Between 20 and 30 students are temporarily accommodated in the School of Mines building. Next year they will be in their own new building adjacent to the hospital, the chairman of which recently stated that there would be 563 free beds at the hospital almost immediately available for the teaching of students; this number of beds would compare favourably with most teaching hospitals in the Empire. In the course of an appeal for students, Dr. F. B. Stibbe, professor of anatomy, University College, Johannesburg, explained that if a student were "out to make money" he had far better put medicine out of the question at once. His remarks have created some interest in view of the recent advance in fees payable to medical men on the Rand.

Free Medical Aid to Dependents of Soldiers.

The Witwatersrand Branch of the British Medical Association has resolved to continue to give free medical attention to dependents of men still on active service, and those discharged from active service but still being supported by the Governor-General's Fund. Appreciative reference to this decision was made by the chairman of the Governor-General's (War Relief) Fund.

Influenza in South Africa.

The bulletin issued by the Union Department of Public Health at Pretoria on Oct. 1st states that 904 cases of epidemic influenza in the Union had been reported during the week ended Sept. 27th. The area most affected was Glen Grey in the Cape Province. The deaths numbered 101.

Oct. 3rd.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

Influenza Epidemic.

IN Victoria the influenza epidemic was declared "officially at an end" on Sept. 15th. This somewhat remarkable pronouncement indicated that the Government would no longer bear any special expenses, and that the majority of the emergency hospitals would be closed. The total number of deaths in Victoria is given as 3224 to that date, but that figure is merely approximate. It is probable many more perished, as the reporting was very faulty. The total cost of special measures is set down as £150,000. Notwithstanding the dogmatic declaration of termination, there are still some 200 patients in hospital. It is possible that had the Government accepted the advice of their original advisory committee to build a special hospital which would serve afterwards as a fever hospital, the cost would have been no greater and the building would have been in existence. One special institution alone cost £800 per week for maintenance. The declaration of finality was the occasion of some departmental congratulations, as there is no question that the organisation was terribly expensive. In New South Wales the disease has remained quiescent. In Tasmania there has been a fairly widespread outbreak of a mild type. Help in the form of doctors and nurses was sent from Sydney and Melbourne. Considerable numbers of cases are still occurring in West Australia. The Federal Quarantine Department has issued a special report, in which it is claimed that both maritime quarantine and inoculation were effective measures, but this claim has scant support outside official opinion. There is no doubt a very creditable effort was made, but it is

incontestable that it failed. After six or eight months of wrangling and confusion, the quarantine arrangements have become once again uniform in operation.

Medical Congress.

The series of triennial congresses was interrupted in 1914 by the outbreak of war. The next meeting of the Australasian Medical Congress will be held in Brisbane early in August, 1920. The leading feature will be a consideration of the "white Australia" policy from the medical standpoint, and in the light of information gathered by the Institute of Tropical Diseases, which is established in Townsville. Another leading discussion will be the future relation of the Federal and State health administration.

Custody of a Child.

A case of somewhat unusual nature has attracted attention in the Victorian Supreme Court. Dr. J. Simpson Macpherson married a Victorian lady and subsequently resided in Borneo, where his wife died, leaving an infant daughter. This child was some time afterwards adopted by her grandmother and brought to Melbourne. An understanding was arrived at that she should remain under the care of her mother's relatives until she was 18, as she was entitled to a considerable annuity on coming of age. This arrangement continued in force to the present time, the child being now about 14. At the conclusion of the war her father came to Melbourne and sought to have the custody of his daughter and to take her to Canada, where he now resides with his second wife and two children of the second marriage. The application was opposed by an aunt who assumed care of the child on the death of the grandmother. Mr. Justice Hood refused the petition of the father on the ground that the child was happy and there was no advantage in disturbing the original agreement. On appeal to the Full Court this decision was unanimously reversed and custody given to the father. It is probable a further appeal to the High Court will result. Dr. Macpherson served with the Canadian Forces in the war, and there is no allegation against his personal fitness.

Venereal Disease.

The Federal Quarantine Department has issued a service publication dealing with venereal disease in Australia. Dr. Cumpston, in discussing notification, is of opinion that the majority of practitioners are fulfilling their obligation. This conclusion is scarcely supported by the figures, which show, both in West Australia, Victoria, and Tasmania, that very few females are included in reports. For example, in Victoria the figures for 12 months are: males 4227, females 560, for gonorrhœa, and 1151 and 698 for syphilis. Dr. Cumpston estimates the incidence of syphilis in Victoria as 164 per 100,000 and of gonorrhœa as 381 per 100,000. He admits these are provisional figures. The compulsory requirement to continue treatment is apparently not satisfactory, for in Victoria 1500 persons are reported as failing to continue, and 887 were traced and dealt with. A large proportion of disease is only partially treated. The authorities have power to detain persons for examination. In Queensland 5, in Victoria 1, and in Tasmania 2 persons were so detained. It is stated the reason more were not examined is the want of places of detention. In one instance a woman went to gaol at her own request. Some interesting figures are given under the head of alcohol and venereal disease. At the Langwarrin military camps, of 521 individuals interrogated 122 were total abstainers, 279 classed themselves as light drinkers, 122 admitted heavy drinking, and 32 were intoxicated when infected. So far as available figures go, very few men use prophylactic measures even when they are supplied. As to the source of infection, of 1052 men at Langwarrin 310 had paid for their infection and 742 had not. At the Victorian Department Clinic, of 995 men 446 had paid and 549 not. Dr. Cumpston considers these figures support the expert opinion that at least half of all male infections are from the amateur and not the professional prostitute. He somewhat naively adds that the reasons why so much clandestine sexual intercourse occurs should be sought and rectified, and concludes by claiming that existing legislation has been successful. At the same time he demands more coercive powers in almost every direction, and there is a good deal of the familiar official optimism expressed in terms "provision of adequate steps" and "adequate equipment on modern lines" and "improved machinery for ensuring the continuance of treatment." Such phrases mean very little.

Sept. 22nd.

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

County Borough of Brighton.

IN his annual report for 1918, Dr. Duncan Forbes gives a most instructive account of the epidemic of influenza which occurred in Brighton during the period under review. Contrasting the number of deaths resulting from the disease, at the different age-periods, in 1918, with those in the outbreaks in the "nineties," he shows that in 1918 most deaths occurred in the age-period 25–35, while in the "nineties" the number of deaths steadily increased from the 5–15 age-period to the 65–75 age-period.

During 1918 the increase in the deaths from influenza was accompanied by an increase in the deaths from pneumonia, and, in the autumn outbreak, by an increase in the number of deaths from pulmonary tuberculosis. But Dr. Forbes regards the recorded increase of deaths from pneumonia as of doubtful significance in view of the fact that comparison of the death certificates signed by different medical men practising in the same district show that the proportion of deaths from influenza in relation to those from pneumonia varied very greatly. One medical man during the outbreak certified 28 deaths from pneumonia and only 4 from influenza. The advice is generally given, during periods of influenza prevalence, that the patient should go to bed as soon as the disease manifests itself. In Brighton a large proportion of the patients who died did take to their beds in the early stages of the illness. Out of a total of 271 deaths, 159 were in bed from the date of onset, 48 from the second day, 24 from the third day, 10 from the fourth day, 15 from the fifth day, 4 from the sixth day, 2 from the seventh day, 3 from the ninth day, 2 from the eleventh day, 1 from the twentieth day, 1 from the twenty-second day, while in two instances death occurred in bedridden patients. This does not, of course, impugn the soundness of the above-mentioned advice, it merely shows that a majority of the fatal cases were severe from the onset. The greatest number of deaths occurred ftom the sixth to the thirteenth day of illness, the maximum being reached on the ninth day.

The first information that influenza was affecting large numbers of the population came from the schools. The spread among scholars was very rapid. At one school, for example, the attendance on Thursday, Oct. 10th, was 155; on Monday the 14th it was only 73. The boys' and girls' departments at this school were not equally affected. The rapidity of spread, combined with the unequal incidence on the boys' and girls' departments, appears to indicate that the disease was, in many instances, contracted in school. The secondary schools in Brighton were not closed during the period of the epidemic and they afforded an interesting field for study of the malady. In reference to that most difficult problem as to whether or not one attack of influenza confers immunity against subsequent attacks, Dr. Forbes managed to obtain valuable data. It may be convenient, in the first instance, to consider the boys' school and the girls' school separately. In the former, of 690 boys on the roll, 39, or 6 per cent., fell ill in the summer term 1918, and of these 39, 5, or 13 per cent., were attacked in the autumn. Of the 651 who had no known attack in summer, 159, or 24 per cent., were attacked in the autumn. Of the 492 remaining with no history of attack during 1918, 48, or 7 per cent., were attacked in the spring of 1919. Of the 164 who were attacked either during the summer or autumn of 1918, 15, or 8 per cent., were attacked in the spring of 1919. The summer attacks seem to have given some degree of immunity from attacks in the autumn; on the other hand, summer and autumn attacks appear to have afforded no defence against a spring attack. There were 447 girls on the roll of the girls' school. Of these, 72, or 16·5 per cent., fell ill in the summer term, of whom 6, or 8 per cent., were attacked in the autumn. Of the 375 who had no known attack in summer 98, or 26 per cent., were attacked in the autumn. Of the 277 remaining with no history of an attack during 1918, 44, or 16 per cent., were attacked in the spring of 1919. Of the 170 who were attacked during the summer or autumn of 1918, 8, or 5 per cent., were attacked in the spring of 1919. From the girls' school

figures it would appear that an attack in summer protected in considerable degree against an autumn attack, and similarly attacks in summer or autumn protected against a spring attack. The results from the two schools are therefore partially contradictory. The combined figures from the two schools indicate that one attack protects to a certain extent against later attacks. Five scholars had second attacks or relapses shortly after their first attacks. Two are reported to have been attacked in summer, autumn, and spring. It is probable, therefore, that second attacks in any one year are of frequent occurrence.

The results obtained from the use of vaccine as a prophylactic agent in Brighton are very interesting. The vaccine used was that issued by the Local Government Board, each c.cm. of which contained *B. influenzæ* 60 millions, pneumococci 200 millions, streptococci 80 millions. On Feb. 15th, 1919, all general practitioners in the borough were informed that they would be supplied with "preventive" vaccine free of charge. Sixteen took advantage of the offer and vaccinated 56 persons, 2 of whom developed attacks of influenza three days and four days respectively after the first inoculation. The histories of these 56 persons as to previous attacks of influenza is not known. Thirty-five school teachers, 19 Queen's nurses, who are the district nurses for Brighton, and 16 of the town-hall staff, making a total of 70 persons, were also vaccinated. Thirty-three, or nearly one-half, had suffered from influenza during 1918, and 3 of these, who had suffered from influenza (1 in June and 2 in October, 1918), had second attacks, 1 three days after the first inoculation, 1 four days and 1 five days after their second inoculations. Concerning the remaining 37, who had no history of an attack of influenza during 1918: Of 8 who were Queen's nurses in regular attendance on influenza cases, 1 developed a severe attack, complicated by pneumonia, three days after the first inoculation. Of 15 who were teachers, 1 developed a mild attack four days after the first inoculation. Of 14 who belonged to the town-hall staff, 2 developed influenza four days after their second inoculation. Thus, of the 126 persons inoculated 9 developed influenza within five days of inoculation and none thereafter. The results point to an increased susceptibility to infection following immediately after inoculation and less certainly to a lessened susceptibility thereafter.

Borough of Ealing.

Consideration is given to the epidemic of influenza in Dr. Thomas Orr's annual report for 1918. In Ealing the disease became epidemic at the beginning of July, an idea of the extent of its prevalence being given by the weekly returns of children absent from school. During July, 959 children were reported to be absent on account of the malady, though most of the cases occurred during the first half of the month. The disease was of a mild character, and the children recovered with remarkable rapidity. Adults also were affected, but inquiries led to the belief that the outbreak owed its spread to the schools, children being affected more than adults. In the month of June no deaths from influenza were registered in the borough, but in July four were recorded in the week ending the 15th, and two in the week ending July 31st. Thus, although the disease was very prevalent during this month among school children, no deaths occurred amongst them, the 6 deaths above referred to being amongst adults. Towards the end of July the first wave subsided. In August only one death, a female 22 years of age, was recorded, and in September none. From July 1st to Sept. 20th only 7 deaths occurred altogether.

A recrudescence of the epidemic was experienced in the second week of October in the Northfields area, Northfields school being chiefly affected. From here it quickly spread during the following week to Lammas school and to Little Ealing and Junction-road schools, taking in the whole of the south-western area of the borough. In the next week the schools, as a whole, became affected to such an extent that the closure of all was recommended for 10 days. At the time of closure the children absent from school numbered 2777 out of 7642 on the rolls, or 36 per cent. of the elementary school population. It must not be assumed, however, that all absentees were cases of influenza, but careful inquiry showed that about 80 per cent. of those absent from school were actually victims of the disease.

The general population was affected at the same time as the school children, but as the disease was not notifiable it was, of course, difficult to gauge the extent of the prevalence amongst adults. A great number of families, however, were severely affected, whole households being completely incapacitated at the same time. During the week ended Oct. 7th 1 death occurred from influenza; the week ended Oct. 14th, none; the week ended Oct. 21st, 2; the week ended Oct. 28th, 9; the week ended Nov. 4th, 30, making a total of 42. During the first week of November the disease reached its maximum, 37 deaths being recorded. After that there was a distinct decrease, as indicated by the following figures: For the week ended Nov. 18th, 15 deaths; for that ended Nov. 25th, 20 deaths: for that ended Dec. 2nd, 15 deaths; for that ended Dec. 9th, 11 deaths; for that ended Dec. 16th, 8 deaths; for that ended Dec. 23rd, 1 death; and for that ended Dec. 31st, 2 deaths. Thus from June 1st to Dec. 31st there were a total of 158 deaths from the disease.

URBAN VITAL STATISTICS.

(Week ended Nov. 1st, 1919.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had steadily increased from 10·4 to 13·7 in the seven preceding weeks, fell to 12·9 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 14·3, or 2·0 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 6·1 in Exeter and in Warrington, 7·0 in Dudley, and 7·6 in Edmonton and in Ilford, to 18·4 in Sunderland, 18·9 in Southend-on-Sea, and 21·7 in Blackpool. The principal epidemic diseases caused 226 deaths, which corresponded to an annual rate of 0·7 per 1000, and comprised 72 from infantile diarrhœa, 71 from diphtheria, 50 from measles, 13 from scarlet fever, and 10 each from enteric fever and whooping-cough. Measles caused a death-rate of 1·5 in Sunderland, 2·4 in South Shields, and 3·1 in Gateshead; and diphtheria of 1·5 in Preston. The 71 deaths from influenza were equal to the number in the previous week, and included 20 in London, and 4 each in West Ham, Birmingham, and Leeds. There were 2350 cases of scarlet fever and 1429 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 2246 and 1355 respectively at the end of the previous week. The causes of 32 deaths in the 96 towns were uncertified, of which 6 were registered in Birmingham, 5 in Sunderland, 4 in London, and 3 in Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 10·2, 12·3, and 11·1 in the three preceding weeks, rose to 12·4 per 1000. The 251 deaths in Glasgow corresponded to an annual rate of 11·7 per 1000, and included 5 from infantile diarrhœa, 3 from diphtheria, and 2 from measles. The 91 deaths in Edinburgh were equal to a rate of 14·1 per 1000, and included 1 each from measles, scarlet fever, diphtheria, and infantile diarrhœa.

Irish Towns.—The 138 deaths in Dublin corresponded to an annual rate of 17·8, or 2·6 per 1000 above that recorded in the previous week, and included 4 from infantile diarrhœa, 2 from diphtheria, and 1 each from measles and scarlet fever. The 115 deaths in Belfast were equal to a rate of 15·0 per 1000, and included 11 from scarlet fever and 1 each from enteric fever, measles, whooping-cough, diphtheria, and infantile diarrhœa.

The Services.

THE HONOURS LIST.

THE following additional appointment and awards to medical officers for services rendered in connexion with the defence of Kut-el-Amarah are announced:—

C.M.G.—Lt.-Col. J. Hennessy, C.B., R.A.M.C.

Distinguished Service Order.—Lt.-Col. E. F. E. Baines, I.M.S.; Maj. C. H. Barber, I.M.S.; Capt. (acting Maj.) A. S. Cane, O.B.E., R.A.M.C.; Capt. E. G. S. Cane, R.A.M.C.

Military Cross.—Capt. J. Startin, R.A.M.C.

MENTIONED IN DESPATCHES.

The names of the following medical officers should be added to the list of Mentions published in THE LANCET of Oct. 28th, 1916, p. 770:—

Maj. E. A. Walker, I.M.S.; Capt. P. B. Bharucha, I.M.S.; Capt. (acting Maj.) A. T. J. McCreery, M.C., R.A.M.C.; Capt. L. Murphy, D.S.O., R.A.M.C.

FOREIGN DECORATIONS.

French.

Légion d'Honneur.—Officier: Maj.-Gen. E. G. Browne, C.B., C.M.G., late R.A.M.C. *Chevalier:* Capt. and Bt. Maj. T. J. C. Evans, M.C., I.M.S.

Hellenic.

Order of the Redeemer.—Officer: Maj. A. E. Kidd, O.B.E., R.A.M.C. (T.F.). *Chevalier:* Capt. A. Oliver, R.A.M.C. (T.F.); Capt. W. A. Valentine, R.A.M.C. (T.F.).

Order of King George I.—Commander: Lt.-Col. C. Garner, C.B.E., ret. pay.

Italian.

Bronze Medal for Military Valour.—Temp. Capt. G. T. Mowat, R.A.M.C.

Portuguese.

Military Order of Avis.—Commander: Temp. Maj. and Bt. Lt.-Col. F. S. Brereton, C.B.E., R.A.M.C.; Col. M. MacLaren, C.M.G., Canadian A.M.C.; Temp. Col. C. F. Martin, Canadian A.M.C.

Roumania.

Order of St. Sava.—5th Class: Capt. J. K. Mossman, M.C., Canadian A.M.C.

ROYAL NAVAL MEDICAL SERVICE.

Surgeon Rear-Admiral V. G. Thorpe is placed on the Retired List at own request.

Surgeon Rear-Admiral Sir W. W. Pryn is placed on the Retired List.

Surgeon Capt. Sir D. J. P. McNabb to be Surgeon Rear-Admiral.

Surgeon Commander (acting Surgeon Capt.) W. H. S. Stalkartt to be Surgeon Captain.

Surgeon Commander F. W. Parker to be Surgeon Captain.

To be Surgeon Lieutenants: J. D. Murphy, C. N. Ratcliffe.

ROYAL ARMY MEDICAL CORPS.

Majors to be acting Lieutenant-Colonels whilst specially employed: J. L. Wood, A. S. Littlejohns.

Major T. E. Harty, to be acting Lieutenant-Colonel whilst commanding a Medical Unit.

M. H. Allen, late Lieutenant-Colonel, Can. A.M.C., to be temporary Major.

Major E. B. Lathbury relinquishes the acting rank of Lieutenant-Colonel.

C. L. Williams, late Major, Indian Medical Service, to be temporary Major.

The undermentioned relinquish the acting rank of Major: Capts. T. B. Nicholls, T. O. Thompson, A. L. Aylmer. Temp. Capts. V. H. Mason, O. de S. Marsh, J. S. Lloyd, W. A. Clayton.

Temp. Capt. M. Fitzmaurice-Kelly to be acting Major whilst specially employed.

Capt. (acting Major) W. McM. Chesney, from Special Reserve, to be Captain.

Temporary Captains to be Captains: S. Fenwick (acting Major, and to retain his acting rank), W. Russell, G. Jackson, K. N. Purkis.

To be temporary Captains: J. L. Rubidge (late temporary Captain), C. R. Worthington (late Captain, Can. A.M.C.), Capt. F. G. Flood (from Special Reserve, to be Captain), J. J. McConnell. Temp. Lieuts. H. P. Fairlie A. E. Ainscow, T. M. Walker.

Temp. Capt. H. G. P. Armitage to be Lieutenant and to be temporary Captain.

To be temporary Lieutenants: T. B. Bokenham, E. P. O'Dowd.

Officers relinquishing their commissions: Temp. Lieut.-Col. H. French (retains the rank of Lieutenant-Colonel). Temporary Majors: H. M. Chasseaud (is granted the rank of Lieutenant-Colonel), W. B. B. Taylor (retains the rank of Major). Temp. Capt. (acting Lieut.-Col.) W. Kennedy Taylor (granted the rank of Lieutenant-Colonel). Temporary Captains granted the rank of Major: C. Kingston, J. L. Wilson. Temporary Captains retaining the rank of Captain: S. E. Martin, L. Lane, J. Macintyre, D. M. Aitken, J. N. Lyons, A. E. Thompson, E. H. R. Harries, T. H. Houston, A. J. Caird, C. G. Skinner, C. C. Court, T. L. Price, G. B. Salmond, A. Fraser, W. McKee, S. H. Browning, E. G. Rawlinson, H. H. Molloy, W. E. Glover, A. O. P. Reynolds, W. Reynolds, D. W. Reid, E. Atkinson. Temp. Lieut. W. F. Murphy (retains the rank of Lieutenant).

SPECIAL RESERVE OF OFFICERS.

Major H. G. Smeeth relinquishes the acting rank of Lieutenant-Colonel.

Capts. T. Lindsay and W. B. Wood relinquish the acting rank of Major.

Lieutenants to be Captains: J. Lipsey, L. J. Schwartz, M. Melvin, T. McS. Wilson, W. M. Savery.

TERRITORIAL FORCE.

Capts. (acting Majors) relinquishing the acting rank of Major on ceasing to be specially employed: C. M. Nicol, S. Scott, J. C. Newman, W. Bowater, C. W. J. Brasher.

Capt. (acting Major) M. S. Doubble relinquishes the acting rank of Major on vacating the appointment as Deputy Assistant Director of Medical Services.

Capt. D. Shannon to be Major.

Capts. E. C. T. Emerson, H. R. Parsloe, and A. E. Crabbe relinquish their commissions and retain the rank of Captain.

1st London Sanitary Company: Capt. E. R. Marle to be acting Major whilst employed as Chief Instructor, Agricultural Wing, Army Science College. Lieut. T. W. Wheeler to be Captain.

1st Scottish General Hospital: Capt. (acting Maj.) J. R. Levack relinquishes the acting rank of Major on ceasing to be specially employed.

TERRITORIAL FORCE RESERVE.

Lieut.-Col. H. H. Tooth, from 1st London General Hospital, to be Colonel.

ROYAL AIR FORCE.

Capt. (acting Major) H. R. B. Hull (Surg.-Lieut., R.N.) relinquishes his commission on reversion to R.N.

The undermentioned are transferred to the unemployed list: Capts. W. Lessey, W. T. Williamson, F. N. V. Dyer, R. B. Adams, J. M. Kirkness (acting Major), S. G. Smith, A. D. Kennedy.

INDIAN MEDICAL SERVICE.

Temporary Lieutenants to be Temporary Captains: Shambhu Nath Aggarwal, Anthony Peter Dias, Gurudinanali Lokran Dudani, Iqbal Singh Nalwa, Jamshed Edulji Frenchman, Shanker Ganpatrao Wagle, Jayashanker Girishanker Trivedi, Narayan Hari Kulkani, George Durairaj Gnanamuttu.

Temp. and Hon. Lieut. Barjor Phirozshah Karani to be temporary and honorary Captain.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

In the October issue Major Dennis Embleton and Capt. George H. Steven, whose report to the Medical Research Committee on the Persistence of Cerebro-Spinal Fever Cases as Carriers of the Meningococcus During Convalescence was published in THE LANCET, May 10th, p. 788, again discuss the subject of meningococcus carriers. The authors divide carriers into two groups: (*a*) Acute or temporary carriers who carry under eight weeks; (*b*) chronic carriers who carry over eight weeks. While acute carriers remain infectious on an average for 24 days the chronic carriers remain infectious on an average for 5½ months, the longest period observed being 1 year and 8 months. Eighty per cent. of the carriers were acute and 20 chronic. Treatment of the carrier appeared to prolong the carrying period. The best method of freeing a meningococcus carrier from infection, the authors conclude, is open air and exercise.—In a paper on the Pathogenesis of Diphtheritic Paralysis Major M. R. Walshe states that "there is, therefore, a weight of evidence which may be considered sufficient to justify us in concluding that diphtheritic paralysis, at any rate in the initial and most characteristic of its stages, that of cranial nerve involvement, is an ascending infection of the central nervous system, the toxin elaborated in the membrane passing up to the medulla in the perineural lymph channels of the cranial nerves innervating the tonsils and fauces."—A Report for the Pathological Committee of the War Office of an Inquiry into Gingivitis and Vincent's Disease Occurring in the Army, by Lieutenant-Colonel Sir David Semple, Captain Cecil Price-Jones, and Miss L. Digby, is continued; and Lieutenant-Colonel Newham, consultant in tropical diseases, East African Expeditionary Force, discusses Trypanosomiasis in the East African Campaign.

Obituary.

JAMES CRAWFORD RENTON, M.D. EDIN., F.R.F.P.S. GLASG.,

LATE SURGEON AND LECTURER IN CLINICAL SURGERY, WESTERN INFIRMARY, GLASGOW; EXAMINER IN SURGERY IN THE UNIVERSITIES OF EDINBURGH AND ABERDEEN; SURGEON TO THE GLASGOW EYE INFIRMARY; LIEUTENANT-COLONEL, R.A.M.C.

James Crawford Renton, who died in Edinburgh on Oct. 20th, was a son of the manse and was born in 1851. He studied in Edinburgh and became M.B. in 1872, proceeding to the degree of M.D. in 1882. In 1874 he settled in Glasgow and there entered upon general practice, and having a special interest in surgery he was shortly afterwards appointed to the staff of the Eye Infirmary. In 1876 his opportunities in the field of his inclination were added to by an appointment to the out-patient department of the Western Infirmary, and upon its staff he became assistant surgeon—afterwards full surgeon and lecturer on clinical surgery, a position he held for 17 years. When war was declared in 1914, and military hospitals were instituted, he was posted, with the rank of Lieutenant-Colonel, to the 4th Scottish General Hospital at Stobhill, near Glasgow. In all these important and responsible positions he did excellent work, the results of which and the experience gained he communicated freely to the profession, for he contributed to medical periodicals and he has left behind him a quantity of valuable and interesting records. For many years, and up to the time of his becoming surgeon to the Western Infirmary, he conducted a large general practice in the West-End of Glasgow, and gained by so doing what is, maybe, the best foundation in experience for the operating surgeon; he thus gained early and direct knowledge of the emergency cases which for success in their treatment demand the most prompt interference; and we find his most valuable teaching in connexion with such acute abdominal conditions as intestinal obstruction, intussusception, appendicitis, ruptures of the hollow viscera, and twisted ovarian pedicles. He possessed in a high degree the clear perception and the power of deduction which constitute the basis of correct diagnosis, and he had the clinical instinct which is the outcome of intimate and careful observation. He was a good operator, careful, deliberate, and courageous; no accident upset him and no difficult proceeding daunted him, for he had the knowledge and experience which casts out fear. The surgeon who could write as he did that excision of the Gasserian ganglion was "exceedingly safe and easy of performance" was gifted with manipulative skill and spirit of a high order. He was an excellent and popular teacher and a kindly and conscientious examiner, and as a man he was—and this most justly—very greatly beloved.

One of his hospital colleagues who knew him well thus writes: "Renton was certainly one of the kindest men I ever met; his consideration for the poor, the distressed, and those who had fallen by the way, was constant, and no one has any idea how much gratuitous work he did." This from his colleague, while the writer, as one of his oldest friends, finds in the words of Carlyle, written of John Sterling, a summation worthy of Renton's character: "True above all things we call him; a man of perfect veracity in thought, word, and deed—there was no guile or baseness anywhere found in him—transparent as crystal, he could not hide anything sinister if such there had been to hide. A more perfectly transparent soul I have never known." J. A. McD.

Correspondence.

"Audi alteram partem."

THE GENERAL MEDICAL COUNCIL: THE ELECTION OF DIRECT REPRESENTATIVES.

To the Editor of THE LANCET.

SIR,—By Nov. 7th voting papers in connexion with the election of Direct Representatives of the profession to be members of this Council will have been posted to all practitioners registered with addresses in England and Wales, Scotland, or Ireland.

In consequence of the war it is probable that many practitioners have left the addresses at which they were resident in 1914 and have not notified their present whereabouts.

Any practitioner whose registered address is within the United Kingdom, and who has not received a voting paper, should immediately communicate with the Registrar of the Branch Council at which he was originally registered, *whether he wishes to take part in the election or not*, in order that there may be no risk of the removal of his name from the Medical Register under Section 14 of the Medical Act, 1858.

The addresses of the Branch Registrars are: The Registrar, Scottish Branch Council, 20, Queen-street, Edinburgh; The Registrar, Irish Branch Council, 35, Dawson-street, Dublin.—I am, Sir, yours faithfully,

NORMAN C. KING,
Registrar of the General and English Branch Councils.
44, Hallam-street, Portland-place, London, W. 1, Nov. 4th, 1919.

THE GENESIS OF CARCINOMA CERVICIS.

To the Editor of THE LANCET.

SIR,—Dr. F. J. McCann's communication to the Royal Society of Medicine and the valuable commentary on the same in your leading article of Oct. 25th have, no doubt, aroused a great deal of interest in a most important subject, which is as important to the busy general practitioner as it is to the consultant of scientific trend. Dr. McCann states that parity is the most important predisposing cause of carcinoma cervicis. You, Sir, have mentioned, no doubt with good authority, that "there is no certain evidence that the number of children born has much influence, and it is a curious fact that American Indian women are more fertile than white women, and yet carcinoma of the uterus among them is comparatively rare." The same may be said of the Jewish race. Orthodox Jewish women, who seldom remain single and are quite prolific, are anything but free from the so-called precancerous lesions, and yet are very rarely affected by cancer of the cervix. German, Hungarian, and American gynæcologists all point out this rarity in the Jewish race. Dr. Abram Brothers, of the Mount Sinai Hospital, New York, met with only five cases of carcinoma cervicis in Jewish women out of a total of nearly 35 000 women examined by him, and these women were mostly Jewesses. At the same time, he found several dozen cases of cancer among the non-Jewish women. Comparing the statistics of the Mount Sinai Hospital with that of the non-Jewish St. Luke's Hospital, there was found to be 6·98 per cent. cancer of the womb cases in the former among the cases of cancer, as compared with 15·98 per cent. in the latter. Very few cases of cancer of the cervix have been found amongst Jewesses in the local hospitals. The late Dr. James Braithwaite, of Leeds,[1] observed that among the great number of Jewesses attending his out-patient department at the Leeds General Infirmary it was exceedingly rare to meet with a case of cancer of the womb. He only found one case in 10 years. Consulting the statistics of the London Hospital, where there is a special Jewish department, he observed the same peculiarity. In a period of five years only one case was found in a Jewess, as against 178 among Gentile women. This infrequency of cancer in the neck of the womb finds its analogy in the rarity of cancer of the rectum in Jews, which is so notwithstanding the fact that Jews are marked sufferers from other rectal conditions, such as hæmorrhoids, fistula, fissure, &c.

These racial immunities may help to throw some light on the ætiology of cancer. Dr. Braithwaite explains this rarity of carcinoma cervicis among Jewish women as being due to somatic or racial difference, or difference in diet. In our humble opinion, we attribute the infrequency to the fact that in orthodox Jewish women chronic endocervitis, especially of the gonorrhœal variety, which, when persistent, Dr. McCann states is an important predisposing cause of carcinoma cervicis, is seldom encountered. We, too, because of the frequency, on the one hand, of the so-called precancerous lesions of the cervix and the infrequency, on the other hand, of the resulting malignant condition in Jewish women, await fuller statistics showing in how many of the precancerous conditions of the cervix malignancy ultimately occurs before advising our patients to undergo even a simple cervical amputation. With the various small operations necessary for the repair of lacerations, &c., no one can deny their usefulness, but when panhysterectomies, with their none too small death-rates, are being recommended without the support of adequate statistics we prefer to recommend a simple diagnostic curettage before submitting the patient to the major operation, in spite of Dr. McCann's warning cases, in one where the patient, from whom a curettage for "fungus endometritis" which was declared innocent by a high pathological authority, died five years later from uterine cancer; and the other case where a single woman died seven years after her cervical polypus was declared innocent, from uterine cancer with secondary growths in the liver.

I am, Sir, yours faithfully,

SAMUEL SAMUEL, M.B., M.R.C.S.,
Late Captain, R.A.M.C.
Leeds, Nov. 1st, 1919.

[1] THE LANCET, 1901, ii., 1578.

CONJUGAL TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—Dr. E. Ward's interesting article in THE LANCET of Oct. 4th on the above subject raises the great question of the diagnosis of pulmonary tuberculosis. He has set his standard of unmistakable and advanced disease in those cases excluded from "suspects" and negatives. Had he made the "meshes" of his net smaller and included as positives all those exhibiting abnormal signs in the middle lobe, those with evidences of shrinking of lung tissue and those with hyperæsthesia of the chest wall, his number of positive cases would probably have been much larger. Perhaps he will inform us if all his negative cases were free from external thoracic deformities, such as are seen in so many grown up persons who have a suspicious or certain tuberculous history. If they were, then the universal prevalence of active or healed tuberculosis receives a denial. On the other hand, if they showed signs of having had an early infection their immunity is well established. The theory of immunity by gradual doses of tubercle bacilli is not easy to accept.

I am at a loss to understand what he means by the term "suspect." If a person who is exposed to tuberculous infection shows any signs of damage to his lungs, his condition is either one of active disease or one of scar tissue as a result of a previous infection which has healed and resulted in immunity. I fail to see any class for "suspects" in persons exposed to infection. I can understand "suspects" in cases where we have no history, or where the history given is unreliable. To wait until hæmoptysis supervenes, or until the infection invades the surfaces of the lungs, is a waste of valuable time for treatment.

Conjugal infection is appreciated by all family practitioners, not so much in the previously uninfected mate showing signs of consolidation or crepitations, but in the impaired health, such as increased liability to take "colds," or as dyspepsia, loss of mental and physical vigour. These infirmities have to be ascribed as due to obvious causes until the signs in the lungs are such as could hardly be misinterpreted. Further, the family practitioner is aware that if this couple produces a family he will have to contend with nutritional disorders and pulmonary diseases in the children. The question of conjugal infection (where couples ordinarily live together) and the infection of the children is quite settled in his mind as a result of his experience. A family practitioner who accepts Dr. Ward's standard of diagnosis finds himself compelled to invent all kinds of specious and unscientific reasons for illnesses, where a wider outlook and a recognition of the infectivity and slow progression of pulmonary tuberculosis would enable

him to remove his patient from the source of infection and allow him to recover.

The article is most interesting and informative, and helps to establish the position of conjugal infection which has been unwisely discarded. I think he would further have added to our sum of knowledge had he tested each of his suspects and negatives with tuberculin. He would probably have found many of them giving reactions to small doses even of the milder preparations, such as P.T.O. Had he followed up those which showed no reaction to small doses with increasing doses, he would have ascertained their degree of tolerance. I make these remarks because he shows in the last few lines of his article some appreciation of the value of tuberculin.

I agree with Dr. C. Muthu's remark about the childhood commencement of tuberculosis, but I fail to see where the "food problems, the social, economic, and psychologic problems" have any effect on the infection of tuberculosis any more than they have upon the small-pox or syphilis infections. If pulmonary tuberculosis most usually commences in childhood it ought to be dealt with at its commencement either by removal from the source of infection or by curative means.—I am, Sir, yours faithfully,

Manchester, Oct. 20th, 1919. R. CRAWSHAW HOLT.

THE POSITION OF RADIOLOGY IN MEDICINE.

To the Editor of THE LANCET.

SIR,—I have read with much pleasure the annotation in your issue of Oct. 25th on Dr. A. E. Barclay's excellent address on Radiology, and congratulate you on your long-overdue advocacy of proper status being accorded to specialists in this most important branch of medical science and research. It has long been a wonder to me how men of world-wide renown in this subject could submit to hold positions on the honorary staffs of important hospitals with a status little better than a dispenser, while frequently men on the medical and surgical sides, with half their attainments and hardly known outside their own hospital, hold status infinitely above them. The radiologists are themselves, however, to blame, for as long as they submit they will be given nothing better. It is the re-embodiment of the same old snobbish idea which in former times made the physician look down upon the surgeon that now makes both look askance at the radiologist, and, as before, that idea is based on ignorance, like most similar ideas. In the North we are more advanced and more just in our appreciations. In my own hospital, Bradford Royal Infirmary, after serving three years on the assistant staff, I was made one of the honorary physicians, and have now entered on my second term of ten years as such. I enjoy the same rank as those on the full medical and surgical staff, with all their privileges. I have had assurance again and again that my findings and my reports are valued by my colleagues.

Unlike Dr. Barclay, I rarely visit the operating theatre. I lay little stress on radiograms as such, well knowing that they can be properly interpreted only by the expert and by the particular expert who knows the conditions under which they have been taken. Many of the most important circumstances, on which an opinion is frequently based, cannot be shown on a one plane surface such as a radiogram. Sometimes because they are mobile conditions observable in the fluoroscope and cannot always be caught on a plate, sometimes because the shadows can only be disentangled and made understandable by stereoscopic plates viewed in a Wheatstone stereoscope, &c. My findings are embodied in *reports* aided by diagrams, and I check my own work by return reports sent me from wards, operating theatres, and post-mortem room. In both public and private practice I never give a skiagram or print to a patient, and I now find that medical men rarely wish them, much preferring my reports, which they say they do understand, to radiograms and prints, which they frankly tell me they do not understand. I regard the radiogram, as *my* diagnostic instrument, on a par with the stethoscope, ophthalmoscope, &c., which, of course, I use like any other medical man if they help me to clear up a doubtful radiological point. In short, I am a medical man not a photographer. This point the Rip Van Winkles of the War Office have not yet grasped. If they had thousands of needless operations would have been avoided, and many many lives would have been saved during the war.

On the therapeutic side of my department, where 8000 treatments are given yearly, no treatment is given but that which is prescribed by me. I am always delighted to coöperate with any of my colleagues, of course, but while under treatment in my department the patients are my patients, just as a case sent from a medical ward to a surgical for operation becomes the patient of the surgeon for the time being. Under such conditions as these a man can give of his best, and, what is more important still, the best men can be found to take up this most important work, which is only yet in its infancy.—I am, Sir, yours faithfully,

Bradford, Oct. 31st, 1919. WILLIAM MITCHELL.

ŒDEMA OBSERVED IN A MONKEY.

To the Editor of THE LANCET.

SIR,—With reference to the paper by Dr. A. Harden and Dr. S. S. Zilva in THE LANCET of Nov. 1st on this subject, in 1905 and 1906, when investigating beri-beri, Dr. de Korté and I met with several monkeys suffering from considerable œdema of the face and genitals, with anæmia and cachexia. All the animals became very ill and died or were destroyed. The facies bore a remarkable resemblance to that of advanced Bright's disease, but albumin was always absent from the urine, and the condition simulated beri-beri in several particulars. Two or three of the animals developed the condition while under observation in the laboratory; and two, at an advanced stage, were obtained from a well-known dealer. Post mortem little was to be found, but microscopically the kidneys showed certain lesions. The observations were published in the *British Medical Journal*, 1907, Vol. II., p. 201. The condition in our monkeys seems very similar to, if not identical with, that occurring in Drs. Harden and Zilva's experimental animal. In the light of recent work I think it probable that the condition of these monkeys was due to some dietetic factor, but I doubt if it were due to deficiency of fat or of fat-soluble A, for those of our animals which developed the disease while under observation were fed in the ordinary way—fruit, potato, and boiled rice, with plenty of milk, &c.

I am, Sir, yours faithfully,

King's College, W.C., Nov. 1st, 1919. R. TANNER HEWLETT.

THE CONTROL OF VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—Mr. E. B. Turner, chairman of the Medical Committee of the National Council for Combating Venereal Disease, in his letter to you appearing in your issue of Oct. 25th, makes two statements which cannot be permitted to pass unchallenged. The first infers that Colonel L. W. Harrison is opposed to immediate self-disinfection, which has proved to be inefficient, and the second infers that there are very small differences in the policy of the Society for the Prevention of Venereal Disease and that of the National Council for Combating Venereal Disease.

Immediately before the formation of the Venereal Prevention Committee, which has now expanded into the Society for the Prevention of Venereal Disease, I visited Edinburgh and had the privilege of lunching with the President of the College of Surgeons, the Dean of the Faculty, and the professor of forensic medicine. These gentlemen stated that some time previously Colonel Harrison had visited Edinburgh and given a lecture on the subject of venereal disease, and had brought forward most convincing statistics to support his strong advocacy of immediate disinfection. I received the definite impression that Colonel Harrison's lecture made them realise with extreme clearness the grave danger of delay in the application of prophylactic disinfection.

The National Council for Combating Venereal Disease issued a leaflet giving Colonel Harrison as authority, suggesting a method of early preventive treatment, and stating that it should be carried out within an hour of exposure. Colonel Harrison was, therefore, convinced that immediate, rather than delayed disinfection was necessary to prevent infection, and if his opinion has changed, his conversion to delayed disinfection must be recent, and perhaps due to a gradual assimilation of moral ideas since he joined the Council of the N.C.C.V.D. Until, therefore, Colonel Harrison definitely states that he has changed his

views, the public only has the right to conclude that it was the education of the soldier in. and the administrative measures for the supply of disinfectants for personal use that was at fault, and that the scientific fact that immediate disinfection is a protection against disease remains unshaken.

As regards the second point, I think that perhaps Mr. Turner may have based his opinion on the articles in *The Times* and other journals, pointing out that the only point of difference was whether palmatate, stearate, or oleate of potassium on the one hand, or permanganate of potassium on the other, was the most effective antiseptic. Perhaps he failed to see the irony that may have underlaid these statements, for though superficially the differences may be slight, fundamentally they are irreconcilable, and are based on entirely different modes of thought. While the National Council for Combating Venereal Disease consider moral teaching, backed by simple cleanliness and delayed disinfection, to be the best policy, the Society for the Prevention of Venereal Disease insist that these methods have been proved to be unavailing to stop, though they may possibly have lessened, the increase of venereal disease, and hold the opinion that immediate self-disinfection, which can only be obtained if the individual carries his disinfectant with him, is the most efficient method for stopping venereal disease, providing the public are sufficiently educated in the matter. The National Council for Combating Venereal Disease consider it unwise to advise the public to provide themselves with packets of disinfectants, while the Society for the Prevention of Venereal Disease instruct the public so to do.

I am, Sir, yours faithfully,

HUGH WANSEY BAYLY,
Hon. Sec., S.P.V.D.

Harley-street, W., Oct. 23th, 1919.

Parliamentary Intelligence.

HOUSE OF COMMONS.

TUESDAY, OCT. 28TH.

Maintenance of British Hospitals.

Sir A. WARREN asked the Prime Minister whether, having regard to the importance of maintaining our hospitals (at present supported by voluntary aid) in full operation, and seeing that it was impossible to raise sufficient funds by begging for their proper upkeep. maintenance, and administration, he would say what steps he proposed taking to arrange for their being taken over by the State and properly provided for.—Dr. ADDISON (Minister of Health) replied in a written answer: I am aware of the increasing difficulties of many of the voluntary hospitals, and recognise that they affect the proper provision of various forms of medical services in hospitals or in centres or clinics, or otherwise, but I am not yet in a position to make a statement thereon.

Whisky for Medicinal Purposes.

Mr. DOYLE asked the President of the Board of Trade what was the quantity of whisky in bond at present in the United Kingdom; in what proportion to the total quantity it was being released for consumption; if foreign vessels were allowed to take out of this country excessive quantities of whisky duty free as ships stores; the amount of revenue lost to the country during the past 12 months owing to this practice; and whether he was aware of the difficulty in obtaining whisky for medicinal and other purposes in the United Kingdom.—Mr. ROBERTS (Food Controller) replied in a written answer: The information asked for in the first part of the question is not available, as whisky is not separately distinguished from other spirit in the official records. Clearances of spirit from bond on payment of duty are permitted at a rate not exceeding 75 per cent. of the clearances in 1916. Foreign vessels bound for overseas destinations are entitled to ship spirits free of duty as stores, but the quantities allowed are calculated on a scale based upon the duration of the voyage and the number of crew and passengers, and are strictly limited. As regards the last part of the question, since the quantity of clearances has been increased to 75 per cent. of that cleared in 1916 the difficulty of obtaining whisky for medicinal purposes has been practically eliminated.

Office International d'Hygiene Publique.

Mr. CAUTLEY asked the Minister of Health whether the international agreement respecting the creation of an international office of public health, which was signed by this and other countries in 1909 for a period of seven years had been renewed, and, if so, when, and for what period; and was there now in existence an international office of public health; was it an active body, and where was it domiciled.—Dr. ADDISON replied in a written answer: Article 8 of the International Convention of Rome, Dec. 9th, 1907, which concluded an arrangement under which the Office International d'Hygiene Publique was to be maintained for seven years, also provided that at the expiration of the seven years the agreement was to continue in force for further seven-year periods between all those States which have not given previous notice of their intention to withdraw from the agreement. The number of countries adhering to the Convention has largely increased since 1907, and the British Government has given no notice of its withdrawal. The Office International d'Hygiene Publique during the war continued its monthly bulletins and other intelligence work on matters relating to international public health, and has now resumed its formal sessions, which are attended by official delegates of the British Government, Canada, Australia, India, and Egypt. The second session of 1919 will be held next week at the headquarters of the office, 195, Boulevard St. Germain, Paris.

WEDNESDAY, OCT. 29TH.

Medical Boards in Cashmere.

Sir J. D. REES asked the Secretary for India whether the provision of medical boards in Cashmere for sick officers had been finally abandoned; and whether no medical aid would in future be provided for officers on leave or for their wives and families either through the Durbar or directly by the Government of India.—Mr. MONTAGU replied: I will make inquiries.

R.A.M.C. Officer's Release.

Mr. BRIGGS asked the Secretary for War if he would state on what grounds Dr. F. J. M'Glade, R.A.M.C., of Blackley, Manchester, was retained in the Army, seeing that he joined up in October, 1915.—Mr. CHURCHILL replied in a written answer: This officer was released from military service on Oct. 22nd.

Medical Service in Mesopotamia.

Mr. HIRST asked the Secretary for War whether since May over 50,000 troops had been involved in the campaign against the Kurds; whether both British and Indian troops were on field rations for a period of weeks; whether the medical arrangements were inadequate; whether he was aware that no appliances were provided, and that the men sick with fever were strapped into panniers and rode on each side of a mule during the July heat; whether the hospital at Suleimania was a collection of tents where men lay on the ground with one ground sheet and one blanket; whether cases of whisky and of beer were sent by convoy 100 miles from the rail-head long before even tents were provided for the troops; and whether he would cause urgent inquiries to be made.—Mr. FORSTER (Financial Secretary to the War Office) replied in a written answer: The answer to the first part of the question is in the negative. It is quite possible that both British and Indian troops were on field rations for short periods, as this is quite usual in similar circumstances. There is no reason to think that the medical arrangements were inadequate. As regards the sick being carried on mules, I am afraid this was probably the only alternative to walking in this difficult hill country. There is no hospital in Suleimania. What my honourable friend probably refers to is the tent subdivision of the field ambulance which forms the best accommodation possible during the initial stages of an advance. While I have no information on the subject, I think it is very improbable that cases of spirits were forwarded to the front in advance of the Expeditionary Force canteens. I am not in a position to give further details without reference to Mesopotamia. If, however, my honourable friend has evidence of matters which on further consideration he thinks call for inquiry I shall be glad if he will forward it to the War Office, where it will receive careful attention.

Pensions Appeals.

Mr. FREDERICK ROBERTS asked the Pensions Minister whether disabled men whose appeals for pensions on ground of attributability had been heard and rejected by the military appeal board were entitled to appeal to the new independent appeal tribunal; and, if not, could he promise to give all men the right of appeal to the latter tribunal.—Sir J. CRAIG (Parliamentary Secretary to the Pensions Ministry) replied in a written answer: The answer to the first part of the question is in the negative. The War Pensions (Administrative Provisions) Act, 1919, which sets up the new tribunals, provides that no appeal shall lie in the case of any claim already heard and rejected by the existing appeal tribunals.

National Insurance Return.

Mr. GODFREY LOCKER-LAMPSON asked the Minister of Health if, in connexion with National Health Insurance, he would issue a return, in the form of a revenue account, of the receipts and expenditure for the last recorded year, including in the receipts the Treasury payments under

separate headings and including in the expenditure the payments for each benefit (stated separately); and, in the event of there being other payments for fees, salaries, postages, printing, travelling, rent, rates and taxes, &c., whether he would add them in a footnote, so that the entire expenditure on national health insurance might be shown.—Dr. ADDISON replied in a written answer: I have had a return prepared, as requested by the honourable Member, for the year 1918 as respects England and Wales as follows:—

Return showing Estimated Receipts and Expenditure (in Round Figures) under the National Health Insurance Acts in the Year 1918 for England and Wales.

RECEIPTS.	£	£
Cash at Bank of England, Jan. 1st, 1918		530,000
Cash in hand of Approved Societies and Insurance Committees, Jan. 1st 1918		890,000
Contributions of employers and employed persons		16,250,000
Interest and sundry receipts		2,360,000
Exchequer—		
Medical and sanatorium benefit	2,767,000	
Sickness, disablement, and maternity benefits...	1,566,000	
Sickness benefit (Women's Equalisation Fund for 1917 and 1918)	445,000	
Sickness benefit (recoupment, invalided soldiers)	322,000	
Administration expenses of Approved Societies and Insurance Committees	687,000	
Central administration expenses	393,000	
		6,170,000
		£26,200,000

EXPENDITURE.	£	£
Medical benefit		4,840,000
Sanatorium benefit		730,000
Sickness and disablement benefits		5,600,000
Maternity benefit		886,000
Administration expenses—		
Approved Societies	1,944,000	
Insurance Committees	278,000	
Central administration	412,000	
		2,634,000
Sums invested—		
By National Debt Commissioners	3,737,000	
By Approved Societies	6,110,000	
		9,847,000
Cash at Bank of England, Dec. 31st, 1918		802,000
Cash in hands of Approved Societies and Insurance Committees, Dec. 31st, 1918		860,000
		£26,200,000

Expenditure in connexion with National Health Insurance is also incurred by other Government Departments, the estimated amount of which in 1918 was as follows:—

	£		£
Office accommodation (buildings, furniture, fuel, light, &c.)	30,400	Revenue Departments, Customs and Excise ...	2,400
Rates	3,900	Revenue Departments, Post Office	100,700
Stationery and printing ...	53,700		
Audit	73,900		£265,000

Prevention of Influenza.

Major DAVID DAVIES asked the Minister of Health if he would state what steps were being taken to prevent and alleviate an outbreak of the influenza epidemic during this winter.—Dr. ADDISON replied in a written answer: A Standing Committee of medical officers, including the Secretary of the Medical Research Committee, to deal with all questions that concern influenza, has been in existence for some time. The Committee inform me that although there has naturally been an autumnal rise in the incidence of respiratory diseases the notifications and mortality returns do not at present indicate any recurrence of epidemic influenza. I may add that I propose at an early date to issue a circular advising sanitary authorities and the public as to the preventive and other measures which should be taken this winter in regard to influenza as far as our present knowledge enables us to advise.

Special Grant to Panel Practitioners.

Mr. HAYDAY asked the Minister of Health whether he was aware that approved medical associations had not participated in the special grant to panel practitioners, although such institutions were approved by the National Health Insurance Commission for the provision of medical benefits to insured persons; and whether he would state the reason for this discrimination.—Dr. ADDISON replied in a written answer: No such discrimination has been made as is suggested in the question. Every effort has been made by my department, both by interview and by correspondence, to obtain from the Friendly Societies Medical Alliance (representing these institutions) certain facts and figures which are necessary for establishing and measuring the amounts that may properly be payable to the institutions, and without which no such payments can be calculated or made; but the Alliance has so far declined to give that information.

THURSDAY, OCT. 30TH.

Medical Supplies for Petrograd.

Colonel WEDGWOOD asked the Prime Minister whether he was prepared to sanction the passing into Petrograd of a small yacht loaded only with medicines and disinfectants that were asked for by the Petrograd Corporation Society, and for which the society was prepared to pay.—Mr. HARMSWORTH (Under Secretary for Foreign Affairs) replied: I see no objection in principle to this proposal. But it will be necessary to submit it to the Supreme Council of the Allied and Associated Governments; and before action can be taken full particulars as to the proposed transaction would be required—such as the port from which the yacht would sail, and the means of ensuring that the cargo is confined to medical stores.

Gratuity for Military Masseuses.

Sir WILLIAM DAVISON asked the Secretary for War if he would state why no gratuity had been granted to military masseuses who were employed throughout the war in military hospitals on their demobilisation, while substantial gratuities were paid to Voluntary Aid Detachment nurses, whose work was in many ways less exacting; and whether a like recognition could be made to this valuable branch of the military nursing service.—Mr. ALFRED DAVIES asked the Financial Secretary to the War Office whether war gratuities had been granted to all hospital workers and by the Red Cross to their masseuses; whether military masseuses had been refused a war gratuity; and, if so, whether, owing to the work done by these masseuses, he would take steps to reverse this decision.—Mr. FORSTER replied in a written answer: I am looking into this question, but I must not be understood to make any promise to alter the decision already announced.

Quinine Supplies and Prices.

Mr. SPOOR asked the President of the Board of Trade whether he was aware that the whole of the quinine (chinchona) production of the world, apart from the small quantity produced by the Government of India for local use, had lately been made the subject of a monopoly of the Dutch and British producers; whether he was aware that this monopoly was fortified, so far as this country was concerned, by an equally firm monopoly of the wholesale chemists of the United Kingdom; whether he realised that the consumer was now being charged 3*s.* 6*d.* per ounce as compared with 1*s.* or even less pre war; and what steps he proposed to take to enable this commodity to be obtained without profiteering.—Mr. BRIDGEMAN (Parliamentary Secretary to the Board of Trade) replied in a written answer: The answer to the first part of the question is in the affirmative. The whole question of the prices and supplies of quinine sulphate to this country is being investigated under Section 3 of the Profiteering Act, and I hope that the findings of the investigators will be ready for publication before the end of this week, or at latest next week.

FRIDAY, OCT. 31ST.

Destruction of Rats.

The House considered the Rats and Mice (Destruction) Bill on Report. Mr. CAUTLEY moved an amendment to Clause 1 to make the offence under the clause "failure to take such steps as may be prescribed in a notice served by a local authority having power to enforce the Act," instead of "such steps as may from time to time be necessary and reasonably practicable," the wording of the clause as it stood. The clause, he said, was absolutely uncertain in its language and effect, and was a relic of the worst form of "Dora."—Sir A. GRIFFITH-BOSCAWEN (Parliamentary Secretary to the Board of Agriculture) in resisting the amendment, said that unless it was made the absolute duty of every occupier of premises to destroy his own rats, and a criminal offence if he declined, the destruction could not be carried out.—Lieutenant-Colonel RAW said that the danger of infection through the agency of rats increased greatly during the war. Besides the destruction of food for which rats were responsible they involved a serious menace of bubonic disease. He was confident that the House would not hesitate to pass this Bill, which would diminish or remove the great danger of plague. The amendment was negatived.

On the motion of Sir A. GRIFFITH-BOSCAWEN, two amendments were inserted in the Bill, which, he said, were intended to modify the harshness of certain of its provisions. The fine of £20 for infringements of the Act was reduced to £5 in cases where no notice was served. By the other amendment the local authority was empowered to serve notice on the occupier, requiring him to deal effectively with the rats within a time specified in the notice, as an alternative to taking immediate action themselves, which was provided for in the Bill as originally drafted. The Bill was read a third time.

MONDAY, NOV. 3RD.

Milk-supplies and Public Health.

Major EDWARD WOOD asked the Parliamentary Secretary to the Board of Agriculture whether matters arising under the Milk and Dairies Consolidation Act were matters relating to agriculture within the meaning of that expression in Clause 7 of the Agricultural and Fisheries (Councils)

Bill.—Mr. PARKER (Lord of the Treasury) replied: The view of my noble friend the President of the Board of Agriculture and Fisheries is that the matters referred to in the question are to some extent matters relating to agriculture, but as they relate also to public health the mode of dealing with these matters by a county council is under consideration by the Board and the Ministry of Health. At a later stage provision will be made in the Bill referred to by my honourable and gallant friend to deal with this point.

Cheaper Milk for Poor Children.

Major EDWARD WOOD asked the Minister of Health how many local authorities had taken, or were taking, steps in exercise of their statutory powers to provide milk at reduced price for children of the poorer classes within their areas.—Sir J. TUDOR WALTERS (Paymaster-General) replied in a written answer: The number of local authorities in England and Wales who informed the Ministry and the Local Government Board of steps taken to provide milk for expectant and nursing mothers and children under 5 years of age, in pursuance of the earlier circular of Feb. 9th, 1918, is 200—that is, approximately 60 per cent. of the number of authorities undertaking maternity and child welfare schemes, including 24 Metropolitan borough councils, 33 county councils, 79 county borough councils, and 144 town and district councils. Practically all these authorities will presumably continue or extend their schemes. About 40 local authorities said that no such action was necessary in their district, while a number of authorities failed to furnish any information on the point. Comprehensive schemes for the supply of milk have been adopted in 50 cases, but, as a general rule, the provision is limited to a supply of milk (including dried milk and condensed milk) to mothers and children attending infant welfare centres. Where fresh milk is supplied this is usually done in the form of orders to local tradesmen. In a number of cases health visitors are instructed to report the need of additional supplies of milk among children whom they visit, and midwives are asked to supply information regarding expectant mothers who do not get sufficient food. Only three authorities have as yet replied to the Ministry's circular of Oct. 14th, and they are among 1280 who already had schemes in operation. Local authorities were asked in the circular to report any new schemes, any extension of schemes, or any existing schemes of which they had not furnished particulars in pursuance of the earlier circular.

TUESDAY, NOV. 4TH.

Milk for Invalids in France and Belgium.

Lieutenant-Commander KENWORTHY asked the Under Secretary of State for Foreign Affairs whether there was an acute shortage of milk for children and invalids in the devastated areas of France and Belgium; and, if so, whether this country was taking steps to relieve the shortage in these districts.—Mr. HARMSWORTH (Under Secretary for Foreign Affairs) replied: The answer to the first part of the question is in the affirmative. As regards the second part of the question, I understand that, while no measures have been taken by His Majesty's Government to relieve the milk shortage in France and Belgium out of relief credits, since the matter is one which solely concerns the French and Belgian Governments, nevertheless the Agricultural Relief of the Allies Committee have supplied from this country a certain quantity of live stock to the areas of the Somme, the Marne, and the Meuse in France, and to the Yser valley in Belgium. The action taken by His Majesty's Government, in conjunction with their Allies, is contained in Annex 4 to Part VIII. of the Treaty of Peace with Germany. I may mention that strong representations have been made to us by the French Government as to the serious nature of their losses of cows and other live stock.

Sir J. D. REES asked what obligation rested upon the people of this country to provide the sick and ailing of other countries with commodities which were only procurable at prohibitive cost for our own people?

Colonel GREIG: Will the honourable gentleman try to make the German Government return the milch cows which they took away during the war?—Mr. HARMSWORTH said that the Supreme Council in Paris had in hand the matter of getting Germany to return the milch cows she had taken away.

THE LADIES' GUILD OF ST. THOMAS.—A meeting of the Guild, the first since 1913, was held on Oct. 30th, in the Governors' Hall of St. Thomas's Hospital, Adeline, Duchess of Bedford, presiding. The report and accounts were read and adopted, and a striking picture was given by Mrs. Battle, retiring honorary secretary, of the successful struggle to carry on the objects of the Guild during the war. Mrs. Edred Corner now becomes honorary secretary, Mrs. Battle chairman of the committee, and Lady Ballance president of the Guild. The Guild supplies garments of all kinds to the hospital patients. Offers of help should be made to the honorary secretary at 37, Harley-street, W.1.

THE NEXT EPIDEMIC OF INFLUENZA.

BY JOHN BROWNLEE, M.D., D.SC.,
DIRECTOR OF STATISTICS, MEDICAL RESEARCH COMMITTEE.

THERE is at present a certain amount of speculation as to when the next epidemic of influenza may be expected. It is impossible with existing knowledge to prophesy, but a few remarks may be made on the mode in which such problems can be attacked. I have been investigating for some time the periodicity of influenza epidemics, and though the work is not complete the following notes contain a brief resume of what has been ascertained.

Periodicity and Characteristics of Recorded Epidemics.

In the first place the series of epidemics of influenza between the years 1889 and 1917, beginning with the last great invasion of the disease, in those places for which statistics are accessible, present a singular phenomenon. Epidemics seem to be of extreme rarity between the end of June and the beginning of December, so rare in fact as to be almost non-existent. This is the season of the year in which bronchitis and pneumonia are least frequent. Influenza, then, does not, if epidemic, assume a form which causes death to any extent until either a bronchitic or pneumonic "constitution" has been established. The great epidemic which occurred last October falls completely out of line with what happened between 1889 and 1917. Some small epidemics, it is true, occurred at this season, but none comparable in size to the last.

The statistics of the epidemics which have been specially investigated are those of London between 1889 and 1896. For this city the weekly number of deaths since 1889 has been published. Also what is of the greatest advantage, the weekly numbers of deaths from bronchitis and pneumonia are available since the year 1870. Considering specially the years 1889 to 1896 as the most typical years, it is seen that the epidemics of influenza have had their maxima from the beginning of January to the end of May. Applying the ordinary method of the periodogram, it is found that the interval between the epidemics is 33 weeks, there being a missed epidemic when an epidemic is due in the autumn. The periodicity is rigid within these years, though later years show some considerable aberration. The method of the periodogram, however, allows us to extend the knowledge acquired with regard to influenza to the associated diseases, bronchitis and pneumonia. There is no question at all that the period between the influenza epidemics between 1889 and 1896 is 33 weeks. Whether this periodicity is accidental or dependent on the special organism of the disease does not affect the next step in the investigation. If it is found that there is no periodicity of 33 weeks with regard to bronchitis or pneumonia in the absence of influenza, and if this periodicity appears with regard to these diseases after the return of influenza, it must be taken as associated definitely with that disease. It is found on examination that between 1876 and 1890 there is no such periodicity with regard to bronchitis and pneumonia, but that from 1889 to 1896 it is very marked. The graphs for 33 weeks may then be compared for the three diseases. It is found on inspection that the deaths from pneumonia precede the deaths from influenza by a little over a week, while the deaths ascribed to bronchitis have their epidemic rise a full fortnight before the rise of influenza. The number of these deaths for bronchitis and pneumonia ascertained by this method of grouping is fully twice the number of deaths ascribed to influenza. It thus seems certain that in these years influenza appeared, on its epidemic onset, first with bronchitic symptoms, slightly later with pneumonic symptoms, and, lastly, with those symptoms more definitely associated with influenza proper. When the several sets of deaths are added together in 33-week periods a very typical epidemic makes its appearance. I have not, so far, been able to obtain weekly statistics of any other great city, but I have examined the monthly statistics of Glasgow, Aberdeen, Massachusetts, &c., and have found nothing which differs essentially from the phenomena found in London.

Deductions Drawn from the Data.

Before passing from this subject it may be said that what has been ascertained with regard to the sequence of these diseases, bronchitis, pneumonia, and influenza for a consideration of a 33 weeks period, also holds when the annual